CHAPTER 2
Water Demand, Supplies, and Water Rights

2.1 Introduction

This chapter describes the water demand and supply assumptions for the Monterey Peninsula Water Supply Project (MPWSP or proposed project). In April 2012, California American Water (CalAm) filed Application A.12-04-019 with the California Public Utilities Commission (CPUC) requesting a Certificate of Public Convenience and Necessity[1] and approval to construct, own, and operate the proposed project. CalAm's application included, among other things, water demand and supply assumptions for the proposed project. In January 2013, CalAm submitted supplemental testimony that updated and superseded the water demand and supply estimates provided in the April 2012 application. The demand and supply assumptions presented below are based on the information provided in January 2013.

The proposed project would develop supplemental supplies to serve CalAm's Monterey District service area (Monterey District). The Monterey District encompasses most of the Monterey Peninsula, including the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the unincorporated areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. CalAm's main distribution system is located within these areas. The main distribution system relies on water supplies from the Carmel River[2] and groundwater from the Coastal subarea of the Seaside Groundwater Basin. CalAm's Monterey

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

2 The Carmel River supply is composed of surface water from the Carmel River and water flowing through the alluvial aquifer that underlies and closely parallels the surface water course of the river, which State Water Resources Control Board Order 95-10 concluded was the river's underflow.

District also includes five small independent water systems along the Highway 68 corridor east of the City of Monterey (Ryan Ranch, Bishop, Hidden Hills, Toro, and Ambler). As described below in Section 2.2.1, the Toro and Ambler areas would not be served by the proposed project; therefore, these areas are not included in the demand assumptions.

CalAm is proposing this project to replace part of its existing water supplies, which have been constrained by legal decisions affecting CalAm's diversions from the Carmel River and pumping from the Seaside Groundwater Basin. State Water Resources Control Board (SWRCB) Order 95-10, SWRCB Order 2009-0060 ("Cease and Desist Order," or CDO), and the Monterey County Superior Court's adjudication of the Seaside Groundwater Basin in 2006 substantially reduced CalAm's rights to use these two primary sources of supply for the Monterey District. Section 2.2 provides information about these decisions. Section 2.3 discusses the components of demand that would be met by the proposed project, and Section 2.4 describes the water supply sources that would be used to meet those demands. Section 2.5 discusses considerations relating to the plant sizing and Section 2.6 describes other factors that could affect future water supplies and demand in the Monterey District.

2.2 Background

2.2.1 Historical Sources of Supply

San Clemente Dam was constructed on the upper Carmel River in 1921 to form San Clemente Reservoir. Surface water diverted at San Clemente Dam was the sole water supply for the Monterey Peninsula until the 1940s. Starting in the 1940s and continuing into the early 1990s, multiple production wells were installed in the Carmel Valley aquifer along the lower reach of the Carmel River. In 1951, Los Padres Dam, which forms Los Padres Reservoir, was constructed about 6 miles upstream of San Clemente Dam to control the inflow of water into San Clemente Reservoir. CalAm has owned and operated both reservoirs since 1966. Over the years, sediment accumulated behind San Clemente and Los Padres Dams significantly reduced the usable storage in both reservoirs. As a result, by 1995 CalAm relied primarily on the multiple wells in the alluvial aquifer along the lower Carmel River for its Carmel River supplies and more recently CalAm has relied entirely on these wells for its Carmel River supply.[3]

In addition to Carmel River supplies, CalAm operates several production wells in the Coastal subarea of the Seaside Groundwater Basin. The Seaside Groundwater Basin, which encompasses 24 square miles, is generally bounded by the Pacific Ocean to the west, the Salinas Valley to the north, the Toro Park area to the east, and Highways 68 and 218 to the south. The Seaside Groundwater Basin consists of several distinct subareas formed by geologic features that act as partial hydrogeologic barriers between the subareas.

East of the main distribution system and along the Highway 68 corridor, CalAm operates wells in the Laguna Seca subarea of the Seaside Groundwater Basin (CalAm, 2006) that supply the Ryan

[3] In June 2013 CalAm commenced removal of the San Clemente Dam; the removal project is expected to take three years.

Ranch, Bishop, and Hidden Hills satellite systems. CalAm is also able to provide Carmel River water to these systems during fires and emergencies via an interconnection between the Crest Tank and Ryan Ranch. As a result of the adjudication of the Seaside Groundwater Basin, these systems will lose all of their allocated Seaside Groundwater Basin supplies by 2018. Therefore, the demand assumptions presented below in Section 2.3 include demand for Ryan Ranch, Hidden Hills, and Bishop.

The Toro and Ambler satellite systems lie east of the Laguna Seca subarea, on the south side of Highway 68. These systems depend on groundwater production wells in the Corral de Tierra subarea of the Salinas Valley Groundwater Basin. There are no existing interconnections between the main distribution system and the Toro and Ambler areas. The Toro and Ambler areas depend on groundwater supplies from the Corral de Tierra Subbasin of the Salinas Valley Groundwater Basin. Because the Toro and Ambler areas would not be served by the proposed project, these areas are not included in the demand assumptions.

The Monterey Peninsula Water Management District (MPWMD) manages and regulates surface and groundwater resources in the Carmel Valley and the greater Monterey Peninsula; the MPWMD's boundaries generally correspond with those of CalAm's Monterey District (see **Figure 3-1** in Chapter 3, Project Description). The MPWMD was established by state statute in 1978 to provide integrated management of all water resources for the Monterey Peninsula; among its functions is the allocation of water supply within its boundaries. MPWMD's initial, interim allocation, adopted in 1981, set CalAm's production limit (from the Carmel River system and the Coastal subarea of the Seaside Groundwater Basin) at 20,000 acre-feet (af), of which a net of 18,600 af was allocated among the jurisdictions in CalAm's service area. With the adoption of its current allocation program in 1990, MPWMD set CalAm's production limit at 16,744 acre-feet per year (afy). MPWMD has adjusted CalAm's production limit several times since (e.g., when a new well was developed in the Seaside Groundwater Basin), most recently in 1997 when the production limit was set at 17,641 afy. In 2008 the area over which MPWMD has jurisdiction was expanded to include the Laguna Seca subarea of the Seaside Groundwater Basin (through adoption of MPWMD Ordinance 135). In addition to MPWMD's allocation program, CalAm's use of its Carmel Valley wells is also restricted by a Memorandum of Agreement (MOA) developed and entered into each year by CalAm, the MPWMD, and the California Department of Fish and Game (now called the California Department of Fish and Wildlife). The MOA provides an annual guideline to minimize localized drawdown from the use of wells located along certain reaches of the river, limits surface water diversions from April to October, and formerly required releases to the river from San Clemente Reservoir (CalAm, 2007). Prior to the 2006 adjudication of the Seaside Basin (described below), the MPWMD assumed CalAm's yield from the Coastal subarea of the Seaside Groundwater Basin to be 4,000 afy (MPWMD, 2006a).

2.2.2 SWRCB Orders 95-10 and 2009-0060

SWRCB Order 95-10, issued in July 1995, substantially limited the supplies available to CalAm from the Carmel River. In the order, the SWRCB established that CalAm has a legal right to 3,376 afy (equivalent to about 3 million gallons per day [mgd]) from the Carmel River system,

including surface water diversions from the river and subsurface flow pumped from the Carmel Valley aquifer. Prior to Order 95-10, CalAm's average annual use during non-drought years was approximately 14,106 afy (12.6 mgd).[4] As such, the order found that CalAm was diverting approximately 10,730 afy of surface and/or subsurface flow from the Carmel River without a valid basis of right and directed CalAm to diligently undertake the following actions to terminate its unlawful diversions: obtain appropriative rights to the Carmel River water that was being unlawfully diverted; obtain water from other sources and make one-for-one reductions of the unlawful diversions; and/or contract with other agencies that had appropriative rights to divert and use water from the Carmel River. Order 95-10 directed CalAm, during its pursuit of an alternative supply, to implement conservation measures to offset 20 percent of demand[5] and restricted CalAm to an annual diversion of 11,285 afy (10.1 mgd) from Carmel River sources. (This amount represented a 20 percent reduction from CalAm's recent average usage of 14,106 afy.) The order also prohibits CalAm from diverting water from San Clemente Dam when streamflows reach a predetermined low flow. The order directed CalAm to maximize use of the Seaside Groundwater Basin for the purpose of serving existing connections—while honoring existing allocations—to reduce diversions from the Carmel River to the greatest practicable extent (SWRCB, 1995a).

In October 2009, the SWRCB adopted Cease and Desist Order 2009-0060, based on the SWRCB's conclusion that Order 95-10 did not authorize CalAm to divert water from the Carmel River in excess of its water rights and that CalAm was illegally diverting water from the Carmel River in violation of Order 95-10 and Water Code Section 1052. The CDO requires that CalAm "diligently implement actions to terminate its unlawful diversions from the Carmel River and … terminate all unlawful diversions from the river no later than December 31, 2016." The CDO prohibits CalAm from diverting water from the Carmel River for new service connections or intensified water use at existing connections, and required CalAm to reduce diversions by 5 percent, or 549 afy, starting in October 2009, with further annual reductions starting in October 2011 and "continu[ing] until all unlawful CalAm diversions from the river have been terminated" (SWRCB, 2009).

2.2.3 Seaside Groundwater Basin Adjudication

Another purpose of the proposed project is to reduce CalAm's reliance on the Seaside Groundwater Basin, which is currently CalAm's other principal source of supply for the Monterey District. In March 2006, the Monterey County Superior Court issued a final decision in Case No. 66343, *California American Water v. City of Seaside, et al.* (Monterey County Superior Court, 2006), and an amended decision in February 2007 (Monterey County Superior Court, 2007) setting forth the adjudicated water rights of the various parties who produce groundwater from the Seaside Basin. The court's decision (which, as amended, is referred to herein as the "Decision" or "adjudication") resulted from a complaint and cross complaints among the users of the Seaside Groundwater Basin.

[4] 14,106 afy was CalAm's average use of Carmel River water from 1979 to 1988, according to Order 95-10 (citing information provided by CalAm).

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

Among other points, the complaint requested a declaration of the parties' individual and collective rights to groundwater and coordination of groundwater management within the Seaside Groundwater Basin. The establishment of adjudicated water rights for all users of the basin was intended to protect the basin from long-term damage associated with potential seawater intrusion, subsidence, and other adverse effects that commonly result from overpumping. The Decision identified the "natural safe yield"[6] for the basin as a whole, and individually for the Coastal and Laguna Seca subareas, and found that production in each of the preceding 5 years had exceeded the natural safe yield throughout the basin and in each of its subareas. The Decision also found (and noted that all parties agreed) that continued production in excess of the natural safe yield would result in seawater intrusion and deleterious effects on the basin.

The Decision established a physical solution to basin management that was intended to reduce aquifer drawdown to the level of the natural safe yield; maximize potential beneficial uses of the basin; and provide a means of augmenting water supply for the Monterey Peninsula. In addition to allocating groundwater rights to the various users, the Decision established an initial "operating safe yield", to be decreased incrementally over time until withdrawals are equal to the identified natural safe yield.[7] The Decision also established the Seaside Groundwater Basin Watermaster, consisting of representatives of the parties to the complaint, to administer and enforce the provisions of the Decision. CalAm's 2007 allocation under the initial operating safe yield was 3,504 afy from the Coastal subarea and 345 afy from the Laguna Seca subarea. CalAm's current (water year 2013) operating safe yield allocation is 2,669 afy from the Coastal subarea and 147 afy from the Laguna Seca subarea (Watermaster, 2012a). CalAm's eventual allocation, when withdrawals pursuant to the adjudication equal the natural safe yield of the basin, will be 1,474 afy from the basin overall (Watermaster, 2009). Although this quantity was calculated based on the basin as a whole, by the time withdrawals have been reduced to equal the natural safe yield, the entire natural safe yield of the Laguna Seca subarea will be allocated to other producers with overlying groundwater rights that are superior to CalAm's appropriative rights (Svindland, 2013a); therefore, as a practical matter, CalAm's adjudicated right to 1,474 afy from the basin will be drawn from the Coastal subarea.

Table 2-1 summarizes key determinations contained in the Decision and the initial and current production allocations prepared by the Seaside Groundwater Basin Watermaster (Watermaster, 2007, 2012a). For comparison, **Table 2-1** also shows the CalAm production level from the Seaside Groundwater Basin prior to Order 95-10, and the MPWMD allocation for CalAm prior to the adjudication.

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

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

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

Basin Management Element	Quantity
Initial operating safe yield – entire basin	5,600 af[a]
Total initial (2007) operating safe yield – Coastal subarea (CalAm and other producers)	4,611 af[a]
CalAm's initial (2007) standard production allocation of operating safe yield – Coastal subarea	3,504 af[b]
CalAm's current (water year 2013) allocation of operating safe yield – Coastal subarea	2,669 af
Total initial (2007) operating safe yield – Laguna Seca subarea	989 af[a]
CalAm's initial (2007) standard production allocation – Laguna Seca subarea	345 af[b]
CalAm's current (water year 2013) allocation of operating safe yield – Laguna Seca subarea	147 af
Natural safe yield – entire basin	2,581 – 2,913 afy
Natural safe yield – Coastal subarea	1,973 – 2,305 afy
Natural safe yield – Laguna Seca subarea	608 afy
Natural safe yield – CalAm's eventual allocation – entire basin	1,474 afy[c]
MPWMD allocation for CalAm for the Coastal subarea prior to the adjudication[d]	4,000 afy
CalAm Seaside Basin production when Order 95-10 was issued	2,700 afy
CalAm average annual production, water years 1996–2006, Coastal subarea	3,695 afy
CalAm average annual production, water years 1996–2006, Laguna Seca subarea	432 afy

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

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

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

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

[d] At the time, MPWMD's jurisdiction did not include the Laguna Seca subarea; therefore a corresponding allocation was not provided for that subarea.

SOURCES: Monterey County Superior Court, 2007; MPWMD, 2006a; Watermaster, 2007, 2009, 2012a; SWRCB, 1995a; Svindland, 2013a.

The Decision also requires that production from the Seaside Groundwater Basin in excess of the natural safe yield (i.e., the difference between the natural safe yield and the interim operating yield limits) be replenished. CalAm and the Seaside Groundwater Basin Watermaster have tentatively agreed to a replenishment schedule of 25 years at a replenishment rate of 700 afy. The replenishment volume, which may occur as in-lieu or artificial replenishment,[8] will be based on a running 5-year average. Based on this replenishment schedule, CalAm's proposed sizing of the MPWSP Desalination Plant assumes that, over the 25-year "repayment period," available supply

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

from the Seaside Groundwater Basin will be limited to 774 afy (700 afy less than CalAm's adjudicated right of 1,474) (Svindland, 2013a). While CalAm and the Watermaster have agreed to this schedule, the Watermaster is continuing to model replenishment scenarios to assess the effectiveness of different scenarios in protecting the basin from saltwater intrusion (Watermaster, 2012b). The Monterey County Superior Court retains full jurisdiction over implementation of the Decision; therefore, it may ultimately be the Court that decides CalAm's final replenishment rate and schedule (Monterey County Superior Court, 2007; Monterey Peninsula Regional Water Authority, 2012).

2.3 CalAm Service Area Demand

Based on SWRCB Order 95-10 and the Seaside Groundwater Basin adjudication, CalAm must develop a replacement water supply to meet existing demand in its service area. In addition, the proposed MPWSP is intended to provide sufficient supplies to meet demand associated with existing legal lots of record and water entitlements in the Del Monte Forest area, and to accommodate tourism demand under recovered economic conditions. The proposed project would, in conjunction with other supply sources, meet an average annual demand of 15,296 afy.[9]

2.3.1 Existing Demand Assumptions

CalAm's estimate of existing demand (13,291 afy) is the average annual demand for calendar years 2007 through 2011 for the areas proposed to be served by the project—CalAm's Monterey District main distribution system and the Ryan Ranch, Hidden Hills, and Bishop systems currently served by water from the Laguna Seca subarea (Svindland, 2013a). **Table 2-2** shows the annual demand for these 5 years.

TABLE 2-2
EXISTING DEMAND[a] 2007–2011 (acre-feet)

	2007	2008	2009	2010	2011	5-Year Average
Annual Demand (January – December)	14,644	14,460	13,192	12,171	11,989	13,291

[a] The existing demand values are for the Monterey District main distribution system plus the Highway 68 satellite systems currently served with water from the Laguna Seca subarea of the Seaside Groundwater Basin (the Ryan Ranch, Hidden Hills, and Bishop water systems).

SOURCE: RBF Consulting, 2013.

[9] This chapter considers demand and supply components primarily in term of the annual averages. However, water demand does not manifest at an average rate, but varies over the course of day, month, and year; thus, all water suppliers must ensure that their supplies are adequate to meet peak demands. The rated capacity of a desalination plant (generally characterized in terms of millions of gallons per day) would therefore be sized to meet peak as well as average demands. See Section 2.5, Plant Capacity, for more information.

2.3.2 Other Demand Assumptions

CalAm proposes that the MPWSP be sized to provide sufficient supplies to also meet the water demands associated with: the anticipated use of water entitlements held by the Pebble Beach Company and other Del Monte Forest property owners ("Pebble Beach water entitlements"); the anticipated economic recovery (or "bounce-back") of the local hospitality industry, resulting in increased water demand by existing businesses compared to current levels; and demand associated with the development of existing legal lots of record in jurisdictions served by the project (Svindland, 2013a). **Table 2-3** shows existing system demand together with these other demand components, which total approximately 2,005 afy; these demand components are discussed further below.

TABLE 2-3
OTHER DEMAND ASSUMPTIONS

Demand Component	Annual Demand (acre-feet)[a]
Existing System Demand	13,291
Pebble Beach Water Entitlements	325
Hospitality Industry Bounce-Back / Economic Recovery	500
Legal Lots of Record	1,180
Total	**15,296**

[a] The source for values shown is the January 2013 technical memorandum on desalination plant sizing (RBF Consulting, 2013) included with CalAm's January 2013 supplemental testimony (Svindland, 2013a). Other CalAm testimony (Svindland, 2012, 2013a) shows 1,181 afy for lots of record.

SOURCE: RBF Consulting, 2013.

2.3.2.1 Pebble Beach Water Entitlements

In 1989, the MPWMD granted water entitlements totaling 380 afy to the Pebble Beach Company and two other fiscal sponsors for underwriting the development of a wastewater reclamation project. Of this 380 afy, entitlements totaling 321 afy have not been used (i.e., have not been exchanged for water permits allowing actual water system connections); as such the remaining (unused to date) entitlements represent water demand that is not reflected in the existing demand figures shown in **Table 2-2**.

The wastewater reclamation project was jointly undertaken by the Carmel Area Wastewater District (CAWD), the Pebble Beach Community Services District (PBCSD), and the MPWMD to provide recycled water in lieu of potable water to golf courses in the Del Monte Forest. The MPWMD subsequently authorized the Pebble Beach Company to sell a portion of the remaining water entitlements to other Del Monte Forest property owners as a means of financing the second phase of the project. Phase I of the project was completed in 1994 and Phase II in 2009. The CAWD/PBCSD project now provides 100 percent of the irrigation water for all of the golf courses and some open spaces areas in the Del Monte Forest. The MPWMD estimates that, on

average, the project saves approximately 1,000 afy of potable water (Stoldt, 2011). To date, the MPWMD has issued water permits totaling 58.419 afy; the remaining entitlement for all CAWD/PBCSD project entitlement holders is 321.581 afy (MPWMD, 2013a). Direct testimony by the MPWMD in February 2013 during the CPUC proceedings on the proposed MPWSP confirmed the remaining water entitlements and noted the likelihood that a portion of the 58.419 afy of issued permits have not yet been connected to the CalAm system; the MPWMD testimony concluded that the estimated 325 afy of future demand associated with the Pebble Beach water entitlements is reasonable (Stoldt, 2013).

2.3.2.2 Hospitality Industry Bounce-Back

The hospitality industry, which includes hotels, restaurants, and other visitor-serving businesses, has experienced reductions in occupancy and visitation rates in recent years due to the economic recession and slow recovery. Representatives of the hospitality industry expect occupancy and visitation rates to rebound and have expressed concern that using a 5-year average from recent years would underestimate the level of demand that the same existing proprietors will experience as the economy improves. In response to this concern, CalAm's January 2013 revised demand estimate allocated an additional 500 afy to meet demand associated with the future rebound of the local hospitality industry (Svindland, 2013a).

To assess CalAm's estimate, the MPWMD conducted its own analysis of demand associated with the potential bounce-back of the hospitality industry (MPWMD, 2013b). The MPWMD compared occupancy and water-use levels for several periods over the last 15 years, finding that the average occupancy level in 2011 was just below 68 percent (compared to 75 percent for the period of 1998 through 2001). The analysis noted that if an improved economy increased occupancy rates, then water demand would rise, and that the proposed project should therefore be sized to accommodate an increase in water use associated with existing restaurant seats and lodging beds under improved economic conditions. The MPWMD's comparison of commercial-sector water use found that:

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

The MPWMD's direct testimony to the CPUC in February 2013 concluded that CalAm's estimate of demand related to tourism bounce-back is reasonable (Stoldt, 2013).[10]

[10] For additional review of CalAm's estimate of this component of demand refer to Chapter 8, Growth Inducement (Section 8.2.1.1). Refer to Section 2.6 of this chapter regarding assumptions about the allocation of water supply provided by the MPWSP.

2.3.2.3 Lots of Record

CalAm's April 2012 direct testimony (Svindland, 2012) and January 2013 supplemental testimony (Svindland, 2013a) indicate that the proposed project would also provide an estimated 1,181 afy of water to meet demand resulting from the development of vacant legal lots of record in the service area. CalAm had previously included this estimate of demand associated with legal lots of record in its 2006 *Urban Water Management Plan* (UWMP). The 2006 UWMP cited a 2001 analysis by MPWMD staff as the source for the estimate of 1,181 afy (CalAm, 2006).

In February 2013, the MPWMD conducted an internal review of its analyses of water demand related to legal lots of record and found no documentation to support the 1,181 afy estimate. The summary of the results of the documentation review, prepared for the MPWMD Board of Directors (MPWMD, 2013c), defines a legal lot of record as "a lot resulting from a subdivision of property in which the final map has been recorded in cities and towns, or in which the parcel map has been recorded in Parcels or Maps or Record of Surveys. Not all legal lots are buildable."[11] The summary states that "[t]he District does not certify that the estimate of 1,181 afy [for demand associated with vacant lots of record] is a valid value" and does not recommend its continued use.

The summary identifies two reports on the topic of lots-of-record water demand that were prepared for the MPWMD in 2000 and 2002, and notes that the 2001 estimate cited in CalAm's 2006 UWMP was from an interim period between these two reports. The 2000 report, which had identified demand of 1,166.3 afy for vacant lots and remodels, was not adopted by the MPWMD Board because it did not include estimates for the city of Monterey or the unincorporated county; the revised 2002 report, which identified demand of 1,211 afy, included estimates for the city of Monterey but not for the unincorporated county (MPWMD 2013c). The MPWMD's direct testimony to the CPUC in February 2013 reiterated these observations, stating that the MPWMD does not consider the 1,181 afy estimate a valid value and that the higher 2002 estimate did not account for vacant lots on improved parcels in the unincorporated areas; the direct testimony concluded that CalAm's estimate may underestimate the actual demand for lots of record (Stoldt, 2013).

2.3.3 2010 UWMP Demand Estimates

Under the Urban Water Management Planning Act,[12] CalAm is required to provide information on existing and projected future demand in the Monterey District. The information presented in CalAm's 2010 UWMP, which was completed in September 2012 (WSC, 2012), is summarized here for informational purposes. The Urban Water Management Planning Act requires all urban water suppliers to prepare a UWMP (and update it every 5 years) for the purpose of "actively pursu[ing] the efficient use of available supplies." Urban water suppliers are required, as part of long-range planning activities, to make every effort to ensure the appropriate level of reliability in service to meet the needs of their various categories of customers during normal, dry, and

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

[12] California Water Code Section 10610 et seq.

multiple dry water years. As such, although CalAm did not cite the 2010 UWMP as the basis for the proposed project's demand estimates, the evaluation of service area demands presented in the UWMP provides insight into CalAm's expectations regarding population growth and water demand in the Monterey District using a different projection methodology from that used for the MPWSP (summarized above in Sections 2.3.1 and 2.3.2).

2.3.3.1 UWMP Service Area Population

Senate Bill 7 of the Seventh Extraordinary Session (SBx7-7), enacted in November 2009,[13] requires all water suppliers in the state to increase water use efficiency; it requires urban water suppliers to achieve a 20 percent reduction in urban per-capita water use by 2020 and to include the following in their 2010 UWMPs: their baseline per-capita water use, 2020 per-capita water use target, and an interim (2015) per-capita water use target. Consequently, CalAm performed an assessment of its service area population to calculate per-capita water use and project future service area demands for its 2010 UWMP.

To determine the population of the Monterey District, which includes portions of unincorporated Monterey County, CalAm's UWMP analysis used geographic information system (GIS) shapefiles containing 2010 population data by census block obtained from the U.S. Census Bureau and data on CalAm's Monterey District service area boundaries obtained from CalAm, to compare census block and service area boundaries and determine how much of the service area was within each census block. Based primarily on the area of the Monterey District within each census block,[14] the UWMP analysis estimated the population of each of the Monterey District's distribution systems and the District as a whole. The UWMP indicates that the population of CalAm's entire Monterey District was 99,396 in 2010 and that the combined population of the main distribution system and the Bishop, Hidden Hills, and Ryan Ranch satellite distribution systems (which would also be served by the proposed project) was 95,972. The UWMP estimated future population growth for each distribution system based on the Association of Monterey Bay Area Governments' 2008 forecast, which the UWMP analysis adjusted to incorporate 2010 census data (WSC, 2012).

2.3.3.2 UWMP Demand Estimates

According to the CalAm 2010 UWMP, total water use (consisting of water delivered to customers and non-revenue water[15]) in the Monterey District in 2010 was 12,809 af. Total water use in the main distribution system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems in 2010 was 12,270 af. Note that this amount is slightly higher than the 2010 water use presented in CalAm's January 2013 supplemental testimony (12,171 af) (RBF Consulting, 2013).

13 Codified at California Water Code Sections 10608 and 10800–10853.

14 The UWMP population analysis found that, for the most part, population distribution was generally uniform within each census block; where population was not uniformly distributed, the distribution was adjusted based on visual inspection of recent aerial photographs.

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

The UWMP presents CalAm's calculation of baseline, interim (2015) target, and 2020 target per-capita water use rates for the Monterey District as required by SBx7-7: the baseline, 2015, and 2020 per-capita use rates were calculated to be 144, 131, and 118 gallons per-capita per day (gpcd), respectively. However, the Monterey District's actual 2010 per-capita water use was 115 gpcd (less than its 2020 reduction target), and the UWMP projections of future water demand over the UWMP planning period (to 2030) assumed the 115 gpcd rate.

The UWMP estimates of non-revenue water are based on information CalAm submitted to the CPUC in 2011 as part a general rate case filing.[16] The UWMP indicates that non-revenue water for the Monterey main distribution system decreased from 2,332 afy in 2005 to 1,389 afy in 2010 and was projected to decrease to 1,251 afy in 2030. Non-revenue water data for the satellite systems are not provided for 2005. In 2010, non-revenue water for the main distribution system plus the Bishop, Hidden Hills, and Ryan Ranch satellite systems was 1,445 afy and was projected to decrease to 1,290 afy in 2030. (Refer to Section 2.6.2, below, for additional discussion of non-revenue water.)

According to the UWMP, total water demand in the Monterey District in 2030 is projected to be 13,936 afy, and total demand in the main distribution system and the Bishop, Hidden Hills, and Ryan Ranch satellite systems in 2030 is projected to be 13,544 afy (WSC, 2012). This amount is 1,752 afy less than the demand estimated for the proposed project (15,296 afy) and the corresponding supply that would be provided with implementation of the proposed project in conjunction with Carmel River, Seaside Groundwater Basin, and other assumed supplies (discussed in Section 2.4). Demand assumed for the MPWSP differs from that of the UWMP because CalAm determined, in response to information presented at workshops on the proposed MPWPS in the second half of 2012, that an additional supply and demand analysis was needed to address the repayment of the Seaside Groundwater Basin, the potential for tourism in the area to recover, the Pebble Beach water entitlements, and water for lots of record. These factors were included in the plant sizing memo included with CalAm's supplemental testimony in January 2013. The UWMP did not anticipate these additional changes, although to a degree the demand associated with lots of record was covered in the UWMP's projection of residential demand, which was based on projected population growth (CalAm, 2013a).

2.4 Available Supplies

With implementation of the MPWSP, CalAm's proposed water supply portfolio would meet a total projected demand of 15,296 afy in the Monterey District service area. **Table 2-4** shows the individual supply sources, both with and without the proposed Groundwater Replenishment Project (GWR).[17] These supply sources are described below.

16 The UWMP cites *Joint Motion for the Adoption of Partial Settlement Agreement between the Division of Ratepayer Advocates, the Natural Resources Defense Council, and California-American Water Company on Non-Revenue Issues in the General Rate Case,* 2011.

17 The Groundwater Replenishment Project (GWR) would convey advanced treated water from the Monterey Regional Water Pollution Control Agency to the Seaside Groundwater Basin, where it could be injected for storage and subsequent recovery by CalAm. In 2012, the MRWPCA, MPWMD, and CalAm entered into a Memorandum of Understanding to enable planning and environmental evaluation of the GWR and negotiate to reach agreement on the GWR (MRWPCA, MPWMD, CalAm, 2012).

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

Supply Source	During Replenishment of the Seaside Groundwater Basin		After Replenishment of the Seaside Groundwater Basin	
	Without GWR (9.6-mgd Desalination Plant)	With GWR (6.4-mgd Desalination Plant)	Without GWR (9.6-mgd Desalination Plant)	With GWR (6.4-mgd Desalination Plant)
Carmel River[a]	3,376	3,376	3,376	3,376
Seaside Groundwater Basin[b]	774	774	1,474	1,474
Aquifer Storage and Recovery (ASR)[c]	1,300	1,300	1,300	1,300
Sand City Coastal Desalination Plant[d]	94	94	94	94
Groundwater Replenishment Project (GWR)[e]	0	3,500	0	3,500
Proposed MPWSP Desalination Plant[f]	9,752	6,252	9,752[g]	6,252[g]
Total	**15,296**	**15,296**	**15,996**[g]	**15,996**[g]

NOTE: mgd = million gallons per day

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

[b] CalAm's adjudicated water right in the Seaside Groundwater Basin is 1,474 afy; in-lieu recharge of 700 afy is assumed during Seaside Groundwater Basin replenishment.

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

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

[e] The GWR project is in preliminary planning stages and may not be operational in time for CalAm to meet the Order 2009-0060 deadline; therefore, supply scenarios with and without the GWR are provided.

[f] Estimates for the desalination plant size assume two scenarios, one with and one without the GWR project.

[g] Assumes the MPWSP Desalination Plant would be operated at the same level during and after replenishment of the Seaside Groundwater Basin.

SOURCE: RBF Consulting, 2013.

2.4.1 Carmel River System

As described above in Section 2.2.2, SWRCB Order 95-10 established that CalAm has a legal right to divert a total of 3,376 afy from the Carmel River system, including surface water diversions from the Carmel River and water pumped from the Carmel Valley aquifer.

2.4.2 Seaside Groundwater Basin Supplies

As described in Section 2.2.3, CalAm's adjudicated right to Seaside Groundwater Basin groundwater at the natural safe yield of the basin is 1,474 afy, and CalAm and the Seaside Groundwater Basin Watermaster have tentatively agreed to a 25-year replenishment schedule for CalAm to pay back the volume of groundwater CalAm has withdrawn in excess of its adjudicated

right. Replenishment is to commence once additional supplies become available. While repayment could occur as either in-lieu or artificial replenishment, CalAm's supply assumption for the sizing of its MPWSP Desalination Plant is that repayment over the 25-year period will occur as in-lieu replenishment at the rate of 700 afy (based on a 5-year running average). Therefore, supply assumed to be available from the Seaside Basin over this period would be limited to 747 afy (based on a 5-year running average).

2.4.3 Aquifer Storage and Recovery

The MPWMD and CalAm are implementing Phase I and Phase II of the Seaside Groundwater Basin Aquifer Storage and Recovery (ASR) project. The ASR project entails diverting and conveying Carmel River water during periods of high flow that occur between December and May of each year to the Seaside Groundwater Basin, where it is injected into the basin (aquifer) for storage and subsequently recovered for delivery to customers. The Phase I project, which was completed in 2007, includes two ASR injection/extraction wells (the ASR-1 and ASR-2 Wells; also known as Santa Margarita Wells #1 and #2). In water year 2011, which was wetter than average, 1,117 af of Carmel River water was injected into the groundwater basin. In water year 2012, 132 af was injected; in 2013, 295 af was injected, and in 2014, no Carmel River water was injected into the groundwater basin via the ASR system. The estimated average annual yield from the Phase I injection/extraction wells is 920 afy.

The Phase II ASR project has been constructed and will be operational in 2015 or early 2016. Phase II includes two additional injection/extraction wells (ASR-3 and ASR-4 Wells) at Seaside Middle School, located on the west side of General Jim Moore Boulevard. The ASR-3 and ASR-4 Wells will provide the capacity to yield an additional 1,000 afy from the ASR system, resulting in a total capacity of 1,920 afy for Phases I and II combined (Denise Duffy & Associates, 2012). The Phase I and Phase II ASR projects correspond to MPWMD and CalAm's existing SWRCB Permits 20808A and 20808C, which authorize the diversion of up to 2,426 afy and up to 2,900 afy for ASR Phase I and Phase II, respectively (SWRCB, 2007, 2011). Permit conditions establish limits on diversions to the ASR system, including a requirement that minimum mean daily instream flows be maintained for the protection of fisheries, wildlife, and other instream uses. Because diversions for the ASR system are contingent on maintaining minimum daily instream flows, and precipitation and streamflow can vary substantially from year to year, for the purposes of CalAm's water supply assumptions, the estimated additional long-term average annual yield from the Phase II injection/extraction wells is 380 afy and the combined long-term average annual yield of the Phase I and Phase II projects is assumed to be 1,300 af.

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

2.4.4 Sand City Coastal Desalination Plant

The Sand City Coastal Desalination Plant, which began operations in April 2010, is owned by the City of Sand City and operated by CalAm. The plant's total capacity is 300 afy, of which CalAm's long-term share, pursuant to agreements between the City and CalAm, is 94 afy. The balance of the plant's cacacity is reserved by Sand City to support its future growth.

2.4.5 Groundwater Replenishment

As described in more detail in Chapter 6, MPWSP Variant, CalAm's Application A.12-04-019 for the MPWSP includes a variation of the MPWSP (MPWSP Variant) that would combine a reduced-capacity desalination plant (6.4-mgd compared to 9.6 mgd under the MPWSP) with a purchase agreement for 3,500 afy of product water from the Pure Water Monterey Groundwater Replenishment (GWR) project, a joint project proposed by Monterey Regional Water Pollution Control Agency (MRWPCA) and MPWMD. The MRWPCA would inject up to 3,500 afy of purified water from a new Advanced Water Treatment Plant into the Seaside Groundwater Basin. CalAm would later extract the 3,500 afy, in accordance with a purchase agreement between CalAm and MPWMD, for delivery to customers.

If CalAm is able to purchase water from the GWR project, the size of its MPWSP Desalination Plant could be reduced. The pertinent agencies are moving the GWR project proposal forward (the Draft EIR was published in April 2015), but because the approvals are in preliminary stages, it is unknown whether the GWR project will be approved and built in a timely manner. Therefore, CalAm's project application proposes a plant capacity of 9,752 afy, but also seeks authorization to reduce the size of the proposed plant (to provide 6,252 afy) if the GWR project has reached certain milestones by the time CalAm is ready to construct the desalination plant and the cost of the GWR water is reasonable. CalAm would then supplement its supplies with water purchased from the GWR project. Refer to Chapter 6, MPWSP Variant, for more information on the GWR project and MPWSP Variant.

2.5 Plant Capacity

To meet projected system demand in conjunction with the other supply sources discussed above, Cal Am proposes to construct a 9.6-mgd desalination plant. The plant would include six 1.6-mgd reverse osmosis modules and one 1.6-mgd standby module. While the discussion of annual water demand and supplies characterizes the overall demand expected to occur within the service area and how supply and demand relate on an annual basis, actual water use fluctuates – over the course of a day, month, season, and year (e.g., less use in the middle of the night, more around dinnertime; more use in the warmer and drier months and seasons than in the cooler and wetter ones; and typically more use in dry years than in average or wet years, at least until any conservation-related responses to drought conditions are adopted and implemented). Similarly, the availability of some water supplies that would be used in conjunction with the proposed desalination plant also varies over the course of the year (e.g., while CalAm has a right to an annual quantity of Carmel River water, the availability of water from the river depends on flows, which are higher in winter and

lower in summer). Because demand does not occur at a constant rate, to provide adequate service, any water system needs to be sized to ensure it can meet the system's anticipated peak demands and it is standard engineering practice to size systems accordingly. Therefore, as part of the development of the proposed project CalAm's engineering consultant conducted an analysis of supply needed to meet monthly demands (RBF Consulting, 2013).

Once the annual demand for the CalAm system (i.e., 15,296 afy) was determined, CalAm evaluated recent demand data to determine the percentage of annual demand that occurs in each month. These percentages were then applied to the annual demand assumed for the MPWSP to develop monthly demands and the associated average daily demands. In addition to the 15,296 afy annual demand for the CalAm system (shown in **Table 2-3**), CalAm estimated that approximately 875 af would need to be returned to the Salinas Valley Groundwater Basin each year.[18] (Refer to Section 3.4.3 in Chapter 3, Project Description, for more information about this aspect of the proposed project.) Therefore, the monthly analysis included Salinas Valley Groundwater Basin return water (delivered during the irrigation season) in addition to distribution system demand. **Table 2-5** shows the average daily demand resulting from that analysis and the assumed contribution of each supply component over the course of a year.[19]

[18] Recent groundwater modeling indicates that as much as 1,080 afy may need to be returned to the Salinas Valley Groundwater Basin (representing 4 percent of the ~24.1 mgd or 27,000 afy of source water). MPWSP supply would be sufficient to provide this larger quantity of return water, if needed, for several reasons: a portion of assumed demand (e.g., a portion of the demand assumed for the components discussed in Section 2.3.2) will probably not be fully realized in the first years of MPWSP operation (which in turn would either reduce the total intake that was assumed in estimating the 1,080 afy needed for return water and/or would increase the amount of supply available for use as Salinas Valley Groundwater Basin return water); similarly, Sand City may not immediately require its full entitlement of 206 afy from the Sand City desalination plant, potentially making more than 94 afy available to CalAm in the early years of MPWSP operation; implementation of the recycled water projects discussed below in Section 2.6.3 (i.e., the recently completed Pebble Beach Recycled Water Project Phase II and the Pacific Grove Local Water Project, which is undergoing CEQA review) would offset a portion of the demand from these areas on CalAm's potable supplies; it may be determined that only the potable portion of the highly saline, brackish water drawn from the Salinas Valley Groundwater Basin would need to be returned, substantially reducing the quantity from 1,080 or 875 afy; and, an additional 700 afy of supply would become available to CalAm at the conclusion of the Seaside Groundwater Basin repayment period (as shown in Table 2-4). Given these factors this analysis assumes the supply capacity would be adequate to provide Salinas Valley Groundwater return water and that the 875 afy assumed in CalAm's estimate of average daily demands is adequate for this analysis.

[19] CalAm's monthly analysis summarized in Table 2-5 reflects annual demand for two components, Pebble Beach Entitlements and Legal Lots of Record, that are higher and lower, respectively, than the annual demand indicated for these components in other CalAm documentation and testimony (shown in Table 2-3); the demand shown for these components in the monthly analysis is therefore assumed to be in error. However, the net effect is that the differences in these two components essentially cancel each other out. (To check the effect of these discrepancies during preparation of this chapter, average monthly mgd was calculated starting with the annual demand of 325 afy for Pebble Beach Entitlements and 1,180 afy for Lots of Record using the methodology described for the monthly analysis. The resulting total demand for each month differed slightly from that shown in CalAm's monthly analysis shown in Table 2-5. That difference, about 0.01 mgd, is considered inconsequential for the purpose of this analysis.) The discrepancies in these two demand components do not affect the conclusions of the monthly analysis, the purpose of which was to show changes in demand that occur throughout the year and ensure that the desalination plant was sized appropriately to meet, in conjunction with other available supplies, that fluctuating demand.

TABLE 2-5
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH

	Mgd												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual [a]
Demand													
Existing System Demand	9.2	9.4	10.2	11.5	13.0	13.9	14.6	14.4	14.1	12.0	10.6	9.3	13,299
Pebble Beach Water Entitlements	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	379[b]
Legal Lots of Record	0.8	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.2	1.0	0.9	0.8	1,120[b]
Hospitality Bounce-Back	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	502
Subtotal: Average System Demand	**10.3**	**10.5**	**11.4**	**12.8**	**15.5**	**16.6**	**17.3**	**17.1**	**16.8**	**13.3**	**11.8**	**10.3**	**15,300**
Salinas Valley Groundwater Basin	0.0	0.0	0.0	0.0	2.4	1.4	1.4	1.4	1.4	1.3	0.0	0.0	876[c]
Total Average Demand	**10.3**	**10.5**	**11.4**	**12.8**	**17.9**	**18.0**	**18.7**	**18.5**	**18.2**	**14.6**	**11.8**	**10.3**	**16,176**
Supplies													
Carmel River	5.9	5.2	5.7	5.1	2.2	1.0	1.0	1.0	1.0	1.0	1.0	6.0	3,376
Seaside Groundwater Basin Production Wells	0.0	0.0	0.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	0.5	0.0	770
Sand City Desalinated Supplies to Distribution System	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	94
Supplies Extracted from Seaside Groundwater Basin via ASR	0.0	0.0	0.0	0.0	5.0	6.3	7.0	6.8	6.5	2.9	1.8	0.0	3,400[d]
MPWSP Desalinated Supplies Direct to System	4.3	5.2	5.6	6.6	7.1	8.1	8.1	8.1	8.1	8.2	8.5	4.2	7,665
Subtotal: Distribution System Supplies	**10.3**	**10.5**	**11.4**	**12.8**	**15.5**	**16.6**	**17.3**	**17.1**	**16.8**	**13.3**	**11.8**	**10.3**	**15,304**
MPWSP Desalinated Supplies to Salinas Valley Groundwater Basin	0.0	0.0	0.0	0.0	2.4	1.4	1.4	1.4	1.4	1.3	0.0	0.0	876
Total Supply	**10.3**	**10.5**	**11.4**	**12.8**	**17.9**	**18.0**	**18.7**	**18.5**	**18.2**	**14.6**	**11.8**	**10.3**	**16,176**

TABLE 2-5 (Continued)
AVERAGE DAILY SUPPLY AND DEMAND ASSUMING 9.6 MGD DESALINATION PLANT, BY MONTH

	Mgd												Acre-Feet
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual [a]
Supply Provided by MPWSP Desalination Plant													
- Desalinated Supplies to Distribution System	4.3	5.2	5.6	6.6	7.1	8.1	8.1	8.1	8.1	8.2	8.5	4.2	7,665
- Desalinated Supplies to ASR	5.2	4.3	3.9	2.9	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.3	2,100
- Desalinated Supplies to Salinas Valley Groundwater Basin	0.0	0.0	0.0	0.0	2.4	1.4	1.4	1.4	1.4	1.3	0.0	0.0	876
Total Desalinated Supplies	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**9.5**	**10,641**
Supply Provided via Seaside Groundwater Basin ASR System													
- Carmel River	0.0	0.0	0.0	0.0	1.9	2.4	2.7	2.6	2.5	1.1	0.7	0.0	1,300
- MPWSP Desalinated Supplies	0.0	0.0	0.0	0.0	3.1	3.9	4.3	4.2	4.0	1.8	1.1	0.0	2,100
Total Extraction	**0.0**	**0.0**	**0.0**	**0.0**	**5.0**	**6.3**	**7.0**	**6.8**	**6.5**	**2.9**	**1.8**	**0.0**	**3,400**

NOTES: mgd = million gallons per day
Components may not sum to the totals shown due to rounding.

[a] Annual totals calculated based on the estimated daily averages shown here, provided for information purposes.

[b] Although the annual demand assumed for Pebble Beach Water Entitlements and Legal Lots of Record in this analysis were higher and lower, respectively, than the annual demand assumed for these components in other project information provided by CalAm (shown in Table 2-3), these differences essentially cancel each other. The net effect is that total demand and supply are reasonably matched and consistent with other information on the overall demand and supply assumed for the MPWSP.

[c] Average daily estimates are based on CalAm's plant sizing technical memorandum (RBF Consulting, 2013) which assumed that 875 afy would be needed for Salinas Valley Groundwater Basin return water. Recent groundwater modeling indicates that as much as 1,080 afy may need to be returned to the Salinas Valley Groundwater Basin (based on 4 percent of total source water intake being drawn from the Salinas Valley Groundwater Basin). MPWSP supply would be sufficient to provide this larger quantity of return water, if needed, for several reasons: a portion of assumed demand (e.g., a portion of the demand assumed for the components discussed in Section 2.3.2) will probably not be fully realized in the first years of MPWSP operation (which in turn would either reduce the total intake that was assumed in estimating the 1,080 afy needed for return water and/or would increase the amount of supply available for use as Salinas Valley Groundwater Basin return water); similarly, Sand City may not immediately require its full entitlement of 206 afy from the Sand City desalination plant, potentially making more than 94 afy available to CalAm in the early years of MPWSP operation; implementation of the recycled water projects discussed below in Section 2.6.3 (i.e., the recently completed Pebble Beach Recycled Water Project Phase II and the Pacific Grove Local Water Project, which is undergoing CEQA review) would offset a portion of the demand from these areas on CalAm's potable supplies; it may be determined that only the potable portion of the highly saline, brackish water drawn from the Salinas Valley Groundwater Basin would need to be returned, substantially reducing the quantity from 1,080 or 875 afy; and an additional 700 afy of supply would be available to CalAm at the conclusion of Seaside Groundwater Basin repayment period (as shown in Table 2-4). Given these factors this analysis assumes the supply capacity would be adequate to provide Salinas Valley Groundwater return water and that the 875 afy assumed in RBF, 2013 is adequate for this analysis.

[d] ASR Extraction to CalAm System assumes prior injection of 1,300 afy from the Carmel River under the ASR project and prior injection of 2,106 afy from the MPWSP Desalinated Plant. See table for the specific portion of MPWSP Desalination Plant supply assumed to be delivered to the ASR injection wells each month.

SOURCE: RBF Consulting, 2013.

As the table shows, demand is expected to be higher in summer months, with the highest in July, and lower in winter months, with the lowest in December and January; this analysis of monthly demand assumed that increased demand associated with bounce-back of the hospitality industry would be evenly distributed in the months May through September. The Sand City desalination plant and proposed MPWSP desalination plants would produce water at a constant rate each month. However, because water would be available from other sources during the winter, from November through April a portion of the MPWSP desalination plant production would be delivered for injection to the Seaside Groundwater Basin ASR system and subsequent withdrawal during the drier months. "Supplies Extracted from the Seaside Groundwater Basin via ASR" in the Supplies section of **Table 2-5** includes both 1,300 afy from the ASR project and 2,100 afy produced by the proposed MPWSP desalination plant. The analysis assumed that a minimum of 1 mgd would be diverted from the Carmel River from June through November in order to maintain year-round operation of CalAm's Carmel River water treatment plant, the Begonia Iron Removal Plant. **Table 2-5** also shows, separate from overall demand and supply information, a breakdown of where supply provided by the MPWSP desalination plant would be directed month to month, including water that would be delivered directly to the CalAm distribution system (i.e., service area customers), water delivered to the ASR system, and water delivered to the Salinas Valley Groundwater Basin. The analysis assumed that delivery to the Salinas Valley Groundwater Basin would occur from May through October, when demand by growers is highest. The section of the table on "Supply Provided via ASR System" shows the assumptions regarding sources of water extracted from that system month to month.

As the table shows, the MPWSP desalination plant would provide 9.5 mgd of supply every month. The monthly analysis prepared for CalAm acknowledged that a 9.5 mgd plant could in theory meet the demand indicated in the analysis, assuming average demand and the assumed availability of other sources. CalAm's engineering consultant recommended the plant be designed at rated capacity of 9.6 mgd for the following reasons (RBF Consulting, 2013):

- While the size of the plant (rated capacity) is established by the design engineer based on certain assumptions regarding feedwater temperature, salinity conditions, and percentage of second pass, the actual day-to-day and year-to-year production of the plant will vary according to actual conditions; in addition, it is difficult to operate any facility at its full rated capacity 100 percent of the time.

- The plant needs to operate in conjunction with other sources, including the ASR system. The conjunctive use strategy may require the desalination plant to operate at a rate that is slightly higher than the average annual rate, especially in late summer months when the ASR supply from the Seaside Groundwater Basin approaches its annual limit.

In assessing the appropriate size for the desalination plant, CalAm conducted other analyses, as well. The demand and supplies shown in **Table 2-5** are based on the five-year annual *average* demand within the existing CalAm system (as well as the other demand assumptions discussed in Section 2.3.2) and the availability of the other assumed supply sources. CalAm also considered scenarios in which system demand reflected the *highest* annual demand of the five years, rather than the average, and scenarios in which water supply from the ASR system was not available (e.g., if the first year of MPWSP operation was a dry year in which no water could be conveyed to the ASR

for storage).[20] Other demand scenarios based on the five years of data indicated the following (refer to Appendix B for the tables prepared by CalAm that summarize these scenarios):[21]

- If average existing system demand (13,291 afy) and a total anticipated demand of 15,296 afy occurred in a dry year at the start of MPWSP operations (i.e., before ASR supply was available) there would be a deficit of 1,300 afy.
- If maximum annual system demand (14,644 afy, shown in **Table 2-2**) occurred in an average rainfall year (i.e., when ASR supply was available) at the start of MPWSP operations, before demand from lots of record was expressed, there would be a deficit of 173 afy.
- If maximum annual system demand occurred in a dry year at the start of operation of the MPWSP (i.e., before ASR supply was available and before there was demand from lots of record) there would be a deficit of 1,473 afy.
- If maximum annual system demand occurring in a dry year at the start of operation of the MPWSP (i.e., before ASR supply was available and before there was demand from lots of record), assuming that year's repayment to the Seaside Groundwater Basin (of 700 afy) there would be a deficit of 773 afy.

To make up for some of the deficit indicated by these scenarios, repayment to the Seaside Groundwater Basin might be postponed (as assumed in the last bullet above) and the Pacific Grove project (discussed below in Section 2.6.2) could provide supplementary supply. As several scenarios reflect, demand from lots of record is not expected in the first year of operation, which would offset a lack of ASR supply should the first year be a dry year (Svindland, 2013b). Similarly, full hospitality industry bounce-back and full development of Pebble Beach entitlements may not occur in the first year of operation. Nonetheless, the above scenarios reflect actual recent system demands and dry conditions, and support the validity of the considerations noted above by CalAm's engineering consultant in support of a 9.6 mgd plant. Provision of capacity slightly greater than that expected based on average supply and demand conditions adds a degree of supply reliability to meet potential fluctuations in demand and supply. (Refer to Section 2.6.1 for a discussion of annual demand since CalAm prepared its plant sizing analyses.)

2.5.1 Ten-Year Demand

The California Department of Public Health's California Waterworks Standards[22] require that public water system's water sources have the capacity to meet the system's maximum day demand (MDD) and (for systems with 1,000 or more service connections) peak hour demand (PHD), and specify that MDD and PHD are to be determined based on the most recent ten years of operation.

As discussed above, the annual and monthly system demand assumptions for the proposed project are based on the most recent five years of operation (in addition to the other demand assumptions discussed in Section 2.3.2). CalAm based its proposed plant sizing on the most recent five years

[20] The ASR system as currently operated does not allow CalAm to bank water from year to year; whatever water is stored needs to be used the same year (Svindland, 2013b); therefore, if there was a dry year at the start of MPWSP operations, the assumed 1,300 afy ASR supply would not be available.

[21] These scenarios are based on the demand assumptions shown in **Table 2-3** except as noted; they do not include deliveries to the Salinas Valley Groundwater Basin.

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

of operation in recognition that demand has been declining (rather than steadily increasing as demand typically had in the past) and that the state has been promoting conservation; CalAm concluded that using the five-year average would provide sufficient supply to meet demand in the initial years of operation (Svindland, 2013b). However, CalAm also analyzed demand based on the past 10 years of operations. The 10-year maximum annual system demand is 15,162 afy (compared to the five-year maximum demand of 14,644 afy and the five-year average demand of 13,291 afy). A larger desalination plant would be needed to meet estimated demand based on 10 years of operation. Scenarios based on the 10-year maximum demand indicated the following (refer to Appendix B for the tables prepared by CalAm showing these scenarios)

- Maximum 10-year annual system demand with the other anticipated demand components shown in **Table 2-3** occurring in an average rainfall year (i.e., with ASR supply) would require that the desalination plant provide 11,623 afy (compared to the proposed project's 9,976 afy) to meet the total annual demand of 17,167 afy.
- Assuming a 9.6 mgd plant providing 9,976 afy (i.e., more than the 9,752 afy plant production assumed for the proposed project), maximum 10-year year demand, excluding the other anticipated demand components, occurring in an average rainfall year would result in a surplus of 358 afy.
- Assuming a 9.6 mgd plant providing 9,976 afy, maximum 10-year demand, excluding the other anticipated demand components, occurring in a dry year would result in a deficit of 942 afy.
- Assuming a 9.6 mgd plant providing 9,976 afy, maximum 10-year demand, excluding the other anticipated demand components, occurring in a dry year at the start of MPWSP operations (i.e., without ASR supply), and postponing repayment to the Seaside Groundwater Basin would result in a deficit of 242 afy.

The above scenarios indicate that the proposed 9.6 mgd desalination plant would not have the capacity to meet projected demand based on maximum 10-year demand. As noted, CalAm used the most recent five years for which demand data were available, rather than 10 years, based on trends showing declining demand and ongoing statewide efforts to encourage water conservation.

With respect to the regulation requiring that systems be able to meet maximum day demand, CalAm has indicated that meeting maximum day demand is less a concern than maximum month demand because the CalAm Monterey District's portfolio of supplies provides sufficient flexibility to meet such short term peak demand. By contrast, peak month demand represents more sustained elevated demand over multiple days that needed to be considered as a factor in plant sizing (Svindland, 2013c).

2.5.2 Peak Month Demand

In addition to meeting average demands, the desalination plant needs to be sized to meet peak day and peak month demands. CalAm considers peak month demand to be a more important consideration than peak day demand because it represents high demand over a sustained period that would therefore be more difficult to meet by drawing more than normal from other supply sources. To assess whether the proposed plant was sized appropriately to meet maximum month

demands, CalAm conducted a separate analysis of peak month demand for the five years 2007 through 2011 (CalAm, 2013b). The analysis showed monthly demand (in acre-feet) for the average of the maximum month demands of the five years considered and for the highest maximum month demand that occurred in the five years. The highest maximum month demand, 1,532 af, occurred in July 2007. **Table 2-6** shows demand in the average maximum month of the five years of data and the highest maximum month demand that occurred. The table also shows the monthly demand in terms of mgd, calculated for informational purposes based on the data provided in af by CalAm. CalAm's analysis of maximum month demand includes CalAm system demands but does not include water returned to the Salinas Valley Groundwater Basin. Excluding water delivery to the Salinas Valley Groundwater Basin, supply would be adequate to meet these maximum monthly demands. As **Table 2-6** indicates, under average maximum month demand conditions, supply would also be adequate to include delivery of 1.4 mgd to the Salinas Valley Groundwater Basin, since supply exceeds demand by about 1.5 acre feet. However, under the highest maximum month demand conditions, delivery of 1.4 mgd would exceed the assumed supplies. In that case, delivery to the Salinas Valley Groundwater Basin might be postponed or the Pacific Grove project (discussed below in Section 2.6) may provide supplementary supply.

2.6 Other Supply and Demand Considerations

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

2.6.1 Recent Service Area Demand

The size of the proposed MPWSP desalination plant is based in part on existing service area demand. CalAm's estimate of existing demand is based on the most recent five years of demand information available at the time CalAm and its engineering consultants were evaluating the design capacity needed for the proposed plant, calendar years 2007 through 2011 (shown in **Table 2-2**). Data for more recent years are now available. **Table 2-7** shows demand information for calendar years 2012 through 2014 in addition to the years 2007 through 2011. The average for these eight years is 12,454 afy, 837 af less than the average for 2007 through 2011 (13,291 afy). A 5-year average based on calendar years 2010-2014 is 11,467 afy, which is 1,824 af less than the average for 2007 through 2011. As **Table 2-7** shows, service area demand has decreased each year.

These recent data indicate that the trend of year to year declining demand shown in **Table 2-2** appears to be continuing. However, the eight years involved also overlap with the economic recession and its continuing effects, the issuance of the SWRCB CDO and its requirements for additional reductions in use of Carmel River water, and three years of drought that likely spurred additional, exceptional efforts on the part of some residents and businesses, that would not be expected to continue at the same level following cessation of the CDO (when a new water supply is available) or in normal rainfall years.

TABLE 2-6
MAXIMUM MONTH DEMAND

Supply			Demand		
Supply Component	**Acre-feet per Month**	**MGD**	**Demand Component**	**Acre-feet per Month**	**MGD**
Maximum Month – 5-Year Average					
MPWSP Desalination Plant	813	8.71	Cal-Am System 5-Year Average	1,388	14.87
Carmel River	100	1.07	Lots of Record	113	1.21
Sand City	8	0.08	Pebble Beach Water Entitlements	31	0.33
ASR Extraction	433	4.64	Hospitality Industry Bounce-Back	48	0.51
Seaside Basin	370	3.96	**Total**	**1,580**	**16.93**
Total	**1,724**	**18.47**	Difference (Supply - Demand)	143	1.53
Maximum Month – 5-Year High					
MPWSP Desalination Plant	813	8.71	Cal-Am System 5-Year Maximum	1,532	16.41
Carmel River	100	1.07	Lots of Record	113	1.21
Sand City	8	0.08	Pebble Beach Water Entitlements	31	0.33
ASR Extraction	433	4.64	Hospitality Industry Bounce-Back	48	0.51
Seaside Basin	370	3.96	**Total**	**1,724**	**18.47**
Total	**1,724**	**18.47**	Difference (Supply – Demand)	1	0.01

NOTE: Components may not sum to the totals shown due to rounding.

SOURCE: CalAm, 2013b.

TABLE 2-7
EXISTING SERVICE AREA DEMAND[a] 2007–2013 (acre-feet)

	2007	2008	2009	2010	2011	2012	2013	2014-	8-Year Average (2007-2014)	5-Year Average (2010-2014)
Annual Demand (January – December)	14,644	14,460	13,192	12,171	11,989	11,570	11,356	10,250	12,454	11,467

[a] The existing demand values are for the Monterey District main distribution system plus the Highway 68 satellite systems currently served with water from the Laguna Seca subarea of the Seaside Groundwater Basin (the Ryan Ranch, Hidden Hills, and Bishop water systems).

SOURCE: RBF Consulting, 2013; CalAm, 2013a; CalAm, 2015

In addition, annual demand figures do not reflect demand fluctuations that occur daily, monthly and seasonally. As discussed in Section 2.5, the desalination plant needs to be sized to accommodate peak demand periods as well as to meet long term average demands. Consequently, it is unlikely that a new analysis of plant capacity requirements that included the two additional years of data would substantially change the proposed sizing of the desalination plant.

Given uncertainty about how closely the recent years of data reflect continuing, longer-term trends, and the need for the proposed plant to meet peak demands, this analysis considers the baseline data used by CalAm (years 2005 through 2011) sufficiently current for planning and sizing purposes.

2.6.2 Potential Future Changes in Supply

2.6.2.1 Los Padres Reservoir

The MPWMD's 2006 analysis of existing demand noted that SWRCB Order 95-10 reduced CalAm's right to divert surface water to storage at Los Padres Reservoir (from CalAm's initial licensed right of 3,030 afy to CalAm's 1984 estimate of the remaining storage capacity in the reservoir of 2,179 afy) based on the premise that the legal right to divert water to storage is limited by the physical ability to store the water. The MPWMD raised the possibility that the SWRCB could revisit Order 95-10 and, by applying the same logic, further reduce CalAm's right to divert water to storage based on additional losses in reservoir capacity due to ongoing sedimentation. The MPWMD estimated the reservoir's capacity in 2006 to be 1,417 af, compared to 2,179 af assumed in SWRCB Order 95-10, and that an additional 762 af of replacement water supply would thus be needed to offset this loss (MPWMD, 2006a). Assuming the MPWMD's estimated sedimentation rate of 19 afy remains accurate, an additional 133 afy of reservoir capacity may have been lost in the 7 years since the MPWMD's 2006 estimate. Assuming the sedimentation rates are borne out and the SWRCB revisits the estimated remaining storage capacity in the reservoir assumed in Order 95-10, CalAm's rights to Carmel River water could be reduced by an additional 895 afy.

2.6.2.2 Table 13 Water

CalAm had an application pending at the SWRCB since 1993 (Application No. 30215A) for a permit authorizing CalAm to divert water from the Carmel River (apart from CalAm's right to divert 3,376 afy recognized in Order 95-10 and its rights under Permits 2080A and 2080C to divert water to the ASR system). The water diversion authorized in response to Application No. 30215A, if a permit authorizing such diversion were issued, is referred to as "Table 13" water in apparent reference to Table 13 of SWRCB's 1995 Decision 1632. Table 13 of Decision 1632 presented SWRCB's "determination of priority and quantities obtained from stipulations, applications, or protests," and includes CalAm and its Application 30215 among the entities listed (SWRCB, 1995b).

In October 2013 the SWRCB issued water-right Permit 21330 in response to this application. The permit conveys to CalAm the right to divert a maximum of 1,488 af annually from December 1 of each year to May 31 of the succeeding year, subject to prior rights, the adequacy of daily instream flow, and other provisions and requirements.

CalAm did not assume the availability of any Table 13 water in sizing the proposed MPWSP Desalination Plant. In testimony submitted to the CPUC in February 2013 regarding the proposed project (Svindland, 2013c), CalAm stated that (at the time) the SWRCB had not yet granted CalAm any water rights pursuant to Table 13, that any such rights would be subject to flow criteria similar to that applied to water diversions for the ASR, and that these diversions would therefore be constrained by the limited timeframe in which they could occur and by the existing production capacity of the wells and treatment plant on the Carmel River. CalAm also noted that (unlike the ASR diversions) Table 13 water could only be used within the Carmel River watershed. Based on its analysis of customer water use in the watershed at times of year when Table 13 water would be available, CalAm estimated that during wet years a maximum of 500 to 600 afy of Table 13 water could be used. Because Table 13 water would not be available during dry years, the availability of Table 13 water was not assumed for purposes of sizing the proposed plant. The February 2013 testimony indicated that if CalAm were to obtain Table 13 water rights and divert the estimated maximum of 500 to 600 afy, the operating level of the plant could be lowered by approximately 5 percent. Alternatively, the Table 13 water rights "could be used first in the year to allow other existing rights to be used later in the year for emergencies" (Svindland, 2013c).

2.6.2.3 Conclusion of Seaside Groundwater Basin Replenishment Period

As discussed in Section 2.2.3, the proposed project assumes the availability of 747 afy of water supply from the Seaside Groundwater Basin. At the conclusion of the 25-year replenishment period, CalAm would have access to its fully adjudicated right of 1,474 afy, thus augmenting available supply by 700 afy.

2.6.3 Potential Future Changes in Demand

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

There is also a possibility that as the price of water changes, the behavior of users may change as well. The economic "law of demand" identifies an inverse relationship between demand for a product and its price—that is, other things being equal, demand for a product decreases as the price increases and vice versus. Thus, if water is less expensive, people may use more of it, while, if water is more expensive, people may conserve more. The future price of water and how water rates will be structured under the MPWSP is currently unknown. In addition, a future change in water prices under the MWPSP would be accompanied by increased water supply reliability under the MPWSP and, it is assumed, the lifting of constraints imposed by, or to achieve compliance with, SWRCB Order 95-10 and the CDO. Therefore, it would be speculative to make assumptions or draw conclusions as to the effect of the future price of water on the behavior of service area customers, especially considering the relatively low levels of water use in CalAm's Monterey District service area (compared to elsewhere in the state), and the area's long history of conservation.

2.6.3.1 Pacific Grove Local Water Project

The City of Pacific Grove is pursuing a project to create a new supply of non-potable water to offset demand for potable water. The Pacific Grove Local Water Project (PGLWP) consists of the construction and operation of a sewer diversion structure and wastewater pipeline, a .25 mgd Satellite Recycled Water Treatment Plant, a waste pump station and force main, a recycled water pump station and conveyance pipelines, a replacement potable water pipeline, and associated connections and retrofits required for the use of recycled water. The first phase of the project would provide about 125 afy of recycled water primarily to the Pacific Grove Municipal Golf Links and the El Carmelo Cemetery. With implementation of the later phases, the PGLWP could provide up to 600 afy of recycled water to sites within the cities of Pacific Grove and Monterey and unincorporated areas of Pebble Beach (City of Pacific Grove, 2014).

Because the PGLWP is in the development stage, CalAm considered it too speculative to include in the sizing of the MPWSP Desalination Plant, but would reduce the operating level of its plant if this project is completed. CalAm supports the PGLWP as long as it does not affect customers in terms of cost and does not detract from the resources CalAm needs to implement the proposed project. CalAm is working on a Memorandum of Understanding with the City of Pacific Grove to provide a framework for factoring the PGLWP into CalAm's supply portfolio (Svindland, 2013a).

2.6.3.2 Pebble Beach Recycled Water Project Phase II

The CAWD/PBCSD reclamation project provides recycled water to irrigate Del Monte Forest golf courses and other open space areas that use recycled water. Phase I of the project, completed in 1994, offset demand for about 70 percent, or 700 af, of the potable water previously used for this purpose (Sweigert, 2008). Phase II of the project, which was completed in 2009, eliminated the need to mix any potable water with the recycled water; the project now supplies 100 percent of the water used at the area golf courses and is estimated to save approximately 1,000 afy of potable water (Stoldt, 2011). In planning for the MPWSP, CalAm based its estimate of current demand on the 5-year average of years 2007 through 2011. Assuming Phase II of the CAWD/PBCSD project became operational midway through 2009, the additional 300-afy demand reduction it achieved would be reflected in only half of that 2007–2011 baseline period. Therefore, based on the expected Phase II savings in potable supply, the current average annual demand may be about 150 afy less than was assumed for the proposed project.

2.6.3.3 Non-revenue Water Reduction

The Final EIR for the Coastal Water Project and previously approved Regional Project[23] noted the potential for improvements in CalAm's distribution system to reduce demand by reducing non-revenue water (also referred to as unaccounted-for water). In its 2009 CDO, the SWRCB observed that: the industry standard for non-revenue water (the difference between a water system's metered production and metered consumption) was 10 percent; CalAm's non-revenue water was about 12 percent of production; and the MPWMD had adopted a regulation requiring CalAm to reduce non-revenue water to 7 percent (SWRCB, 2009). The SWRCB concluded that CalAm should be required to reduce its system losses by about 549 afy (equivalent to 5 percent of CalAm's average diversions from the Carmel River cited in the CDO) and immediately commence work to reduce the losses. Similarly, in the CPUC's 2009 decision (D.09-07-021) on a CalAm general rate case application, the CPUC addressed CalAm's acute need to reduce non-revenue water in the Monterey District, noting that non-revenue water was a measure of operational efficiency used by the CPUC and others to assess utility operations. The CPUC ordered CalAm to develop and implement a program for reducing unaccounted-for water in its Monterey main system and associated subsystems and, to provide a financial incentive, the CPUC created a penalty/reward program to be calculated based on a 9 percent non-revenue water target (CPUC, 2012).

CalAm's April 2012 project application and associated testimony described efforts the company has undertaken to reduce non-revenue water in its Monterey District. These efforts included conducting a comprehensive study that: investigated and analyzed main breaks and service leak data, evaluated pressure-control methodologies, reviewed water meter sizing, and computed "the unavoidable leakage rate and the Infrastructure Leakage Index (ILI)" for the Monterey District,

[23] As described in Chapter 1 (Section 1.2), CalAm previously proposed the Coastal Water Project to replace existing Carmel River supplies to which CalAm no longer has a recognized legal right pursuant to Order 95-10 (discussed in Section 2.2.2 above). The Regional Project emerged as an alternative to the Coastal Water Project during the environmental evaluation of the Coastal Water Project. The CPUC certified the EIR in 2009 and approved the Regional Project, which would have been jointly implemented, in two phases, by CalAm and the Marina Coast Water District, in 2010. CalAm eventually withdrew its support for the Regional Project due to the inability to resolve issues that arose related to its implementation, and in 2012 proposed the MPWSP as an alternative.

which was found to be very low (CalAm, 2012). Other actions CalAm has undertaken include deploying acoustic leak-detection devices throughout the system; commencing a main line replacement program in Seaside and a program to replace service lines made from a material now known to have a higher-than-average failure rate; and implementing a reward program to encourage employees to recognize and report cases of water theft and unmetered consumption (Sabolsice, 2012).

However, a June 2012 CPUC decision (D.12-06-016) addressing rate case matters found that non-revenue water in the Monterey District "continues to approach 12 percent" (CPUC, 2012). That decision maintained the previously set target of 9 percent for the Monterey main and Bishop systems, reduced the previously set target for the Hidden Hills system from 13.8 to 9 percent, and established a 10 percent target for Ryan Ranch.

Information presented in the CPUC's 2012 decision indicates the need for continued reductions in non-revenue water within the Monterey District. CalAm's subsequent annual reports to the CPUC of district water system operations for 2012 and 2013 (CalAm, 2014a, 2014b) show that non-revenue water (based on the difference between total production and metered deliveries) represented 6 percent and 11 percent of system production, respectively. Non-revenue water representing 6 percent of system production is below the industry standard of 10 percent (as cited in the SWRCB CDO), below the 9 percent established by the CPUC for the Monterey Main and Bishop subsystems in the 2012 rate case, and below MPWMD's requirement that CalAm reduce non-revenue water to 7 percent. The average for the two years (8 percent) is 1 percent higher than MPWMD's requirement and 1 percent lower than the 9 percent established in the 2012 rate case. Non-revenue water in 2013 alone, however, is higher than both the target set in the 2012 rate case and MPWMD's requirement. The difference in system losses in 2012 and 2013 suggest the potential that additional system improvements would yield more consistent reductions in non-revenue water. Based on the service area's current average annual demand of 13,291 afy, a 2 percent reduction in non-revenue water (i.e., from 11 to 9 percent) would reduce system losses by about 265 afy.

2.6.3.4 General Plan Buildout

CalAm is not proposing that the MPWSP meet future demands associated with general plan buildout, although the proposed project does include water for some future development (i.e., development of vacant lots of record and development in the Del Monte Forest commensurate with existing Pebble Beach water entitlements). Phase 2 of the previously approved Regional Project[24] included water to meet projected future service area demands; the MPWMD prepared that estimate of future water needs in 2006 based on information obtained from the service area jurisdictions (MPWMD, 2006b). Each jurisdiction provided estimates of the number of residential units and nonresidential square footage that would be developed under buildout of the currently adopted general plan. In general, projections of residential development included the number of single-family units, multifamily units, secondary units, and residential remodels. Because each jurisdiction did not submit an estimate for lots of record as a distinct category, that

[24] Refer to Chapter 1 for more information on the Regional Project.

aspect of general plan buildout in the 2006 estimate is not directly comparable to CalAm's current estimate for lots of record. Based on the information jurisdictions provided, the MPWMD estimated that 4,545 afy would be needed to meet future water demands (MPWMD, 2006b).

Since the 2006 estimate was prepared, the future water needs of two jurisdictions have been revised, lowering the overall total.[25] Monterey County has adopted a new general plan that provides revised water demand estimates (Monterey County, 2010), and the City of Pacific Grove recently submitted testimony on the proposed project revising its estimate of water needed to accommodate general plan buildout (Hardgrave, 2013). In addition, Sand City has constructed the 300-afy Sand City Coastal Desalination Plant. In consideration for the delivery of 300 afy of potable water from this plant to the CalAm system, MPWMD Ordinance 132 establishes a water entitlement of 206 afy from the CalAm system for Sand City, separate from the city's current water allocation, and indicates that the remaining 94 afy will be permanently added to CalAm's system (as shown above in **Table 2-4**). The estimated future demand for Sand City is therefore revised to reflect that 206 afy of the city's future demand will be offset by supply from the city's desalination plant (which is not included in the supplies assumed for the MPWSP in **Table 2-4**). With these revisions, future demand would total 3,466 afy. **Table 2-8** shows the MPWMD's 2006 future demand estimates and these estimates with the three revisions.

As discussed in Section 2.3, the proposed MPWSP would provide water supply to meet a projected total average annual demand of 15,296 afy, which is 2,005 afy more than CalAm's estimate of current annual demand (shown in **Table 2-2**). Part of this 2,005 afy is intended to serve existing service area customers (in the hospitality industry) under improved economic conditions, and part is intended to serve future development of lots of record and development associated with Pebble Beach water entitlements. Analysis presented in Chapter 8 (Section 8.2.1.1) indicates that 500 afy may overestimate the amount needed to serve existing hospitality industry customers under improved economic conditions by about 250 afy and that the other 250 afy designated for hospitality industry bounce-back may therefore be available to serve future growth. Assuming that revised estimate for hospitality industry bounce-back, about 1,755 afy of the 15,296 would be available to serve additional development in the CalAm service area. Although the project proposes to meet a more circumscribed range of future development components than was assumed for Phase 2 of the Regional Project, the amount of water provided by the project to serve additional development represents about half (51 percent) of the revised estimate of future service area demands. As the revised estimate in **Table 2-8** indicates, the proposed project would provide 1,691 afy less than would be needed to meet water demand associated with general plan buildout (3,446 afy) and the other future water demand considered in the 2006 analysis.

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

TABLE 2-8
FUTURE WATER DEMAND – SERVICE AREA JURISDICTIONS
(acre-feet per year)

Jurisdiction	Future Supply Needs (2006 Estimate)[a]	Future Supply Needs (Revised 2006 Estimate)
City of Carmel	288	288
City of Del Rey Oaks	48	48
City of Monterey	705	705
City of Pacific Grove	1,264	500[b]
City of Sand City	386	180[c]
City of Seaside	582	582
Monterey County (Unincorporated)	1,135	1,005[d,e]
Monterey Peninsula Airport District	138	138
Total	**4,545**	**3,446**

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

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

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

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

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

SOURCES: MPWMD, 2006b; Monterey County, 2010; Hardgrave, 2013.

A proposed Settlement Agreement between CalAm and other parties relating to CalAm's application for approval of the MPWSP (CPUC application A. 12-04-019, discussed above in Section 2.1), states that the MPWMD plans to initiate a process and collaborate with the Monterey Peninsula Regional Water Authority, Monterey County, and CalAm to develop a process to determine an accurate estimate of the added capacity needed to meet the General Plan buildout projections for communities served by CalAm. The findings from this process, which will be undertaken separately from the current A. 12-04-019 proceeding, will be reported to the CPUC either within a subsequent rate design phase of A. 12-04-019 or as part of the general rate case process (CalAm et al., 2013).

2.6.4 Assumptions about the Allocation of MPWSP Water

As discussed in Section 2.3, CalAm proposes to size the MPWSP Desalination Plant to provide, in conjunction with other sources, 15,296 afy (which would increase to 15,996 afy at the conclusion of the 25-year Seaside Basin replenishment period). This amount is 2,005 afy more than the 13,291 afy existing average annual demand (shown in **Table 2-2**) (and without Seaside

Basin replenishment would be 2,705 afy more than existing demand). In addition to meeting existing service area demand, CalAm proposes sizing the plant to meet demand associated with existing Pebble Beach water entitlements, estimated demand associated with the development of vacant legal lots of record, and demand from intensified water use at existing visitor-serving businesses resulting from an improving economy. While such increases in water demand can reasonably be expected, estimating future water demand necessarily entails the use of assumptions about demand factors that cannot be predicted with absolute certainty. (As discussed in Section 2.3.2, MPWMD's review of the factors included in CalAm's estimate produced somewhat different results, as did the analysis of water demand associated with hospitality industry bounce-back presented in Chapter 8, as noted above in Section 2.6.3.) Moreover, under past and current allocation programs, once a given supply has been allocated to a jurisdiction, whether or not the jurisdiction reserves its allocation for specific uses and at specific levels that had been assumed during planning would be up to the jurisdiction. It is the jurisdiction's responsibility to determine (subject to applicable plans, policies, laws, and regulations) whether or not to approve a new or intensified water use within its boundaries.

Since the MPWMD's inception one of its key functions has been the allocation of water supply within its boundaries. The water supply that would be provided by the proposed project, in conjunction with other existing and planned supplies, would continue to be subject to MPWMD's allocation program. The 15,296 afy that would be provided by the MPWSP with other assumed supply sources is somewhat less than the water production and sales limit currently established for CalAm in MPWMD's Rule 32 (17,641 afy and 16,406 afy, respectively). Rule 32 includes a note acknowledging that although these resource limits were established by the MPWMD through the adoption of various ordinances, action taken by the SWRCB and the Seaside Adjudication put constraints on those limits. CalAm has proposed no changes to the allocation program as part of the proposed project.

Given that the total supply with the MPWSP is less than the production limit set in the current allocation, in one respect it could be assumed that the MPWSP supply has already been allocated. However, since the MPWSP would provide 2,344 afy less than the currently established production limit (the basis for the current allocation), one or more jurisdictions would inevitably experience a shortfall relative to its current allocation (i.e., when the supply capacity provided by the MPWSP is reached). Moreover, MPWMD's Rule 30 states (in part) that "[f]rom any new supply of water the District shall establish a specific Allocation for each Jurisdiction, and may also establish a District Reserve Allocation." The proposed Settlement Agreement between CalAm and other parties relating to CalAm's application for approval of the MPWSP (A.12-04-019, discussed above in Section 2.1) (CalAm et al., 2013) states that the MPWMD has begun the process of updating the EIR prepared for its existing allocation program, to address the environmental impacts pertaining to the allocation of water from the MPWSP. The proposed Settlement Agreement also states that MPWMD will initiate a process, separate from the current A.12-04-019 proceeding, that will involve collaboration with the Monterey Peninsula Regional Water Authority, Monterey County, and CalAm to develop proposed amendments to MPWMD's water allocation ordinances to address the allocation of water obtained from the MPWSP. The proposed amendments will then be presented to the MPWMD Board of Directors for

consideration (CalAm et al., 2013). Although MPWMD has not yet initiated the process to address allocation of the proposed MPWSP supply, this analysis assumes that the same considerations that informed the past and current allocations will be relevant to the allocation of the MPWSP supply. This section therefore presents a brief overview of MPWMD allocation program.

2.6.4.1 MPWMD Water Allocation Program

MPWMD's 1981 Annual report provides a summary of the MPWMD's 1981 allocations and describes the intent of and basis for those allocations. At the time production capacity assumed to be available to CalAm was 20,000 af. According to that summary:

> The District's allocation is intended to equitably distribute available capacity so that each city and the County can plan land use recognizing water as a constraint and to set a maximum limit for consumption by a jurisdiction. The allocation is thus a means of ensuring that no one agency uses all the available capacity and that each agency has incentive to shepherd its share…
>
> CalAm's 20,000 afy has been allocated among the cities and County based on projected year 2000 need within the existing CalAm Service Area. It is the District Board's policy that the allocation should attempt to put the water where the market would have dictated growth. This policy would achieve comparable equity by allowing each jurisdiction to plan into the future with an amount of water equivalent to their projected needs….

To project future demand the MPMWD retained a regional economic consultant to project growth. Economic, demographic, and land use trends were used to develop projections of residential development and employment growth by jurisdiction. CalAm's average water use per dwelling unit and average use per employee were used to convert the growth projections into projected water use. **Table 2-9** shows the baseline water use by jurisdiction and projected year 2000 demand estimates developed for the 1981 allocation. The shifts in the percentage of total indicate that the jurisdictions were expected to grow at differing rates, as would be expected.

TABLE 2-9
BASE AND FUTURE WATER USE ASSUMED IN 1981 ALLOCATION
(acre-feet per year)

Jurisdiction	Base Use (1979) (acre-feet per year)	Percentage of Total Base Use	Projected Year 2000 Use (acre-feet per year)	Percentage of Year 2000 Use
Carmel	967	6.4%	1,108	5.5%
Del Rey Oaks	206	1.4%	264	1.3%
Monterey	4,225	28.2%	6,178	30.9%
Pacific Grove	2,106	14.0%	2,528	12.6%
Sand City	59	0.4%	360	1.8%
Seaside	2,067	13.8%	2,572	12.9%
Monterey County (Carmel Valley and Other)	5,370	35.8%	6,990	35.0%
Total	**15,000**	**100%**	**20,000**	**100%**

SOURCE: MPWMD, 1981.

The basis for MPWMD's current allocation program was its 1990 Water Allocation Environmental Impact Report (Allocation EIR). The purpose of the Allocation EIR was to assist MPWMD in deciding *how much* water can or should be produced in the Monterey Peninsula Water Resource System and how the CalAm water *should be allotted* among the jurisdictions in CalAm's service area, as well as how the allocation program should be administered and how adjustments to the program should be made in the future.

The supply option adopted by MPWMD (with adoption of Ordinance 52) identified an annual production total of 16,700 afy available for CalAm's part of the water resource system (i.e., the Carmel River and the Coastal subarea of the Seaside Groundwater Basin). At the time Ordinance 52 was adopted, water use exceeded this supply level by 230 afy.

In 1993 the Paralta Well in the Seaside Basin began operation, expanding the available water supply. The MPWMD assigned 230 af to address the previous dedication for use of the 230 acre-feet deficit and allocated an additional 358 af to the jurisdictions and the District (Ordinance 70, adopted in June 1993). In 1995, the District adopted Ordinance 73, which distributed equally to the jurisdictions the 34.72 afy remaining of the 50 afy that previously had been allocated as District Reserve. **Table 2-10** shows the resulting total allocation of the Peralta well supply to the CalAm service area. Although MPWMD ordinances do not articulate the District's selection of specific distribution strategies, the total allocation of the Paralta Well supply shown in **Table 2-10** appears to strike a balance that considers base consumption (and the relative size of the jurisdictions) as well as projected growth.

TABLE 2-10
ALLOCATION OF PARALTA WELL SUPPLY IN CALAM SERVICE AREA

Jurisdiction	Ordinance 70 Paralta Well Allocation (acre-feet per year)	Ordinance 73 Share of Remaining District Reserve[a] (acre-feet per year)	Total Ordinance 70 and Ordinance 73 (acre-feet per year)	Percentage of Total Paralta Well Allocation
Carmel	15.07	4.34	19.41	5.4%
Del Rey Oaks	3.76	4.34	8.1	2.3&
Monterey	71.98	4.34	76.32	21.3%
Pacific Grove	21.43	4.34	25.77	7.2%
Sand City	47.52	4.34	51.86	14.5%
Seaside	61.11	4.34	65.45	18.3%
Monterey County	83.37	4.34	87.71	24.5%
Monterey Peninsula Airport District	3.76	4.34	8.1	2.3%
Subtotal	*308*	*34.72*	342.72	*95.7%*
MPWMD Reserve	50	15.28 [b]	15.28 [b]	4.3%
Total	**358**	**50**	**358**	**100%**

[a] Ordinance 73 allocated 12.5 percent of what remained of the MPWMD's Reserve (34.72 afy) to each jurisdiction.
[b] Portion of the initial 50-afy MPWMD Reserve that had been allocated before Ordinance 73 was adopted.

SOURCES: MPWMD, 1993, 1995, 1996.

Based on the past allocations as well as MPWMD's 2006 efforts to develop future demand estimates (described above in Section 2.6.2, under General Plan Buildout), this EIR assumes that water provided by the proposed project will be allocated to meet existing demand and that supply beyond that needed for existing demand would be allocated in general proportion to projected growth in the CalAm service area jursidictions.

2.7 Water Rights

The topic of water rights is not one typically addressed in an EIR. It is a legal matter that is rarely relevant to the question of whether a proposed project being evaluated under CEQA will generate impacts to the environment. Here, however, the issue of water rights is addressed as one of project feasibility.

The MPSWP is designed to take supply water from the ocean via underground slant wells that draw water from the earth underneath the ocean. The wells would be located at the western edge of the Salinas Valley Groundwater Basin (SVGB, or the "Basin"), a large basin that extends approximately 100 miles between Monterey Bay (in the northwest) to the Salinas River headwaters (in the southeast). Details concerning the Basin conditions and stratigraphy are set forth in Section 4.4, Groundwater Resources, of this EIR. Particularly because the project supply wells could draw some water from the Basin, concerns have been expressed as to whether CalAm does or will hold legal rights to use the water that would be taken from beneath the ocean floor, treated at the desalination plant and supplied to CalAm customers located outside the Basin.

The CPUC is not the arbiter of whether CalAm possesses water rights for the project and nothing in this EIR should be construed as the CPUC's opinion regarding such rights, except to the extent that the Commission must determine whether there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible. Indeed, no government agency will formally grant water rights to CalAm for the proposed project. In California, groundwater other than subterranean streams and underflow of surface water is regulated through common law (court cases) rather than through the issuance of permits by government bodies. The SVGB is not an adjudicated groundwater basin, so use of the groundwater in the Basin is not subject to existing court decree, written agreements or oversight by an impartial watermaster.[26] There are three relevant types of groundwater rights: (1) overlying rights whereby those who own land atop the Basin may make reasonable use of groundwater on such land; (2) prescriptive rights whereby a water user has acquired another's rights to use water via an open, adverse and sustained use under a claim of right that such user would otherwise not be entitled to; and (3) appropriative rights whereby the groundwater may be used outside the Basin or for municipal purposes. While CalAm owns 46 acres of land (the proposed desalination plant location) overlying the Basin, that land would not support sufficient water for the project and would not enable CalAm to use the water beyond the

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

property that it owns. CalAm has no prescriptive groundwater rights in the Basin. Thus, CalAm would take any Basin water for the project via appropriative rights, which are junior to existing appropriations and to overlying users. If the proposed project is approved and any dispute arises as to whether or not CalAm possesses legal water rights, such dispute likely would be resolved through court action. Naturally, however, if CalAm does not have the right to the supply water for the proposed project, the proposed project could not proceed and would thus prove infeasible. This section examines whether, based upon the evidence currently available, the CPUC could conclude that there is a sufficient degree of likelihood that CalAm will possess rights to the water that would supply the desalination plant such that the proposed project can be deemed to be feasible.

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

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

2.7.1 State Water Resources Control Board Report

Questions have been posed in the CPUC's proceeding as to whether CalAm could demonstrate water rights to the MPWSP supply water. Furthermore, as noted above, CalAm's right to the project feedwater is a basic feasibility issue for the project. The SWRCB is the state agency authorized to exercise adjudicatory and regulatory functions in the areas of water rights, water quality and safe and reliable drinking water. By letter dated September 26, 2012, the CPUC asked that the SWRCB assist the CPUC and issue an opinion as to whether CalAm has a credible legal claim to the supply water for the MPWSP. The SWRCB carefully considered the then-available facts and evidence concerning the MPWSP, prepared a draft report on water rights, circulated that

draft for public comments and ultimately issued its July 31, 2013, Final Review of California American Water Company's Monterey Peninsula Water Supply Project (Report). The Report is attached to this EIR as **Appendix B2**.

First off, the Report confirms that "Cal-Am needs no groundwater right or other water right to extract seawater from Monterey Bay." Report at 33. Thus, CalAm does not need a water right for the vast majority of the MPWSP supply water because the groundwater modeling demonstrates that most of the supply water for the 9.6 mgd desalination plant with supply wells at the proposed CEMEX location will be seawater from the Monterey Bay. According to the groundwater model, under current (2012) land use conditions, only 7 percent of the MPWSP supply water would originate in the Basin, with the remaining 93 percent being seawater. The model also examined the project under future (2060) land use conditions that presume growth in accordance with governing city and county general plans; under those future conditions, the model shows that only 4 percent of the MPWSP supply water would originate in the Basin, with the remaining 96 percent being seawater. No water right need be secured for the seawater element of the MPWSP supply water.

Next, as to water that may be derived from the Basin itself rather than from the ocean, the Report explains (as discussed above) that there are three types of groundwater rights: (1) overlying rights for those who own land above the Basin; (2) prescriptive rights for those who have adversely established a pattern of use of Basin water; and (3) appropriative rights. CalAm would need an appropriative groundwater right to retrieve and export water from the Basin. The Report sets forth the view of the SWRCB as to the set of circumstances that must exist in order for CalAm to have the requisite appropriative rights to support the project. Essentially, if evidence demonstrates that the extraction of otherwise unusable Basin groundwater will not harm lawful water users and that any fresh water extracted can be returned to the Basin in a manner to ensure that no injury accrues to existing legal water users, then CalAm would have rights to the portion of feedwater that comes from the Basin because the MPWSP product water that contains such Basin water would be "developed water," and because the constitution requires maximum use of the state's waters under the physical solution doctrine.

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

Setting up the test to discern whether CalAm possesses water rights for the proposed project, the Report states:

> [I]n developing a new water source Cal-Am must establish no other legal user of water is injured in the process. Even if Cal-Am pumps water unsuitable to support beneficial uses, the water could not be considered developed water unless users who pump from areas that could be affected by Cal-Am's MPWSP are protected from harm.
>
> Cal-Am proposes a replacement program for the MPWSP water that can be attributed to fresh water supplies or sources in the Basin. If Cal-Am can show all users are uninjured because they are made whole by the replacement water supply and method of replacement, export of the desalinated source water would be permissible and qualify as developed water. In the future, this developed water would continue to be available for export even if there are additional users in the Basin. Developed waters are available for use by the party who develops them, subject to the "no injury" standard discussed previously.

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

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

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

Specifically on the topic of the return options for any fresh water drawn from the Basin by the MPWSP, the Report provides:

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

Report at 39. The Report emphasizes more than once that any injection wells or percolation basins for the purpose of returning fresh water to the Basin would need to be located where the underlying aquifer does not contain degraded water so as to avoid a waste of beneficial water.

> In summary, to appropriate groundwater from the Basin, the burden is on Cal-Am to show no injury to other users. Key factors will be the following: (1) how much fresh water Cal-Am is extracting as a proportion of the total pumped amount and how much desalinated water is thus available for export as developed water; (2) whether pumping affects the water table level in existing users' wells and whether Cal-Am can avoid injury that would otherwise result from any lowering of water levels through monetary compensation or paying for upgraded wells; (3) whether pumping affects water quality to users' wells within the capture zone and whether Cal-Am can avoid or compensate for water quality impacts; (4) how Cal-Am should return any fresh water it extracts to the Basin to prevent injury to others; and (5) how groundwater rights might be affected in the future if the proportion of fresh and seawater changes, both in the larger Basin area and the immediate area around Cal-Am's wells.

Report at 46. The Report concluded that further data were needed in order to apply the facts and evidence to the criteria set forth in the Report for determining CalAm's water rights. The Report noted that information was needed pertaining to the depth of the project supply slant wells, the hydrogeologic conditions of the site and the area, updated modeling to evaluate the impacts of the project, aquifer testing, and studies to help determine how extracted fresh water would be replaced. Most of these studies and activities have been undertaken and the results are described and reflected in Section 4.4 Groundwater Resources. CalAm has supplied details about its proposed supply wells and return options. Test borings have helped to characterize the hydrogeologic framework within which the project would operate. Groundwater modeling has been conducted. CalAm also obtained approval to construct a test well on the CEMEX site. That well is in place (and core samples taken during the drilling of the well confirmed the assumptions about hydrogeologic conditions) and test pumping is occurring. Once the test well results are complete, the modeling will be verified and will be re-run as warranted. Thus, the full panoply of evidence concerning the project's relationship to groundwater (and thus water rights) may continue to evolve and be refined throughout the CPUC proceeding. This preliminary analysis of water rights is based upon detailed and extensive groundwater aquifer characterization and groundwater modeling that has been undertaken by the EIR preparers to assess the effects of the project on Basin groundwater users.

2.7.2 Project Water Rights

Based upon the extensive groundwater modeling conducted for this EIR and discussed in detail in the Groundwater section and in **Appendix E2**, approximately 93 - 96 percent of the desalination feedwater is forecasted to be seawater. As noted above, CalAm extraction of seawater does not require water rights.

Also based upon the groundwater modeling and particle tracking conducted for this EIR, approximately 4 to 7 percent of the MPWSP feedwater would come from within the Basin. The question presented is thus whether Basin water rights holders would be injured or harmed by virtue of such Basin withdrawal. The concept of significant effect under CEQA is not necessarily synonymous with harm or injury to water users. In other words, physical change caused by the project might not rise to the level of a significant environmental impact under CEQA, but could still cause some harm or injury to a Basin water user. Here, though, the Groundwater Resources section of this EIR strives to and does in fact effectively and meaningfully analyze two of the three precise concepts of "harm" or "injury" set forth in the Report. These two criteria are reduction in the availability of fresh water and reduction of water quality. In addition, the analysis in the Groundwater Resources section (based upon the groundwater modeling) provides an answer to the third concept of injury set forth in the Report, that of a reduction in groundwater levels that requires users to spend additional funds to extract water.

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

- Substantial depletion of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned land uses for which permits have been granted).

- Extraction from the subsurface slant wells were to lower groundwater levels in the Dune Sand Aquifer or the 180-Foot Equivalent Aquifer such that nearby municipal or private groundwater production wells were to experience a substantial reduction in well yield or physical damage due to exposure of well pumps or screens.

- Violation of any water quality standards or degradation of water quality.

- Extraction from the subsurface slant wells were to adversely affect groundwater quality by exacerbating seawater intrusion in the Basin.

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

Due to the long-degraded condition of water in the Basin within the radius of influence (the area within which the project could affect groundwater levels), there is a dearth of active wells that could potentially be affected by the project. Seawater intrusion in the 180-Foot Aquifer currently extends up to 8 miles inland. The distance that would experience a water level decline of up to one foot in the 180-Foot and 180-Foot Equivalent Aquifer under project pumping conditions would extend about 5 miles from the supply wells in most water years, but could extend up to 7 miles. The logical conclusion, confirmed by the modeling effort, is that the project will not draw fresh water into the supply wells, but will only remove brackish water from the Basin.

As discussed in detail in the Section 4.4, Groundwater Resources, there are no known active water supply wells within the area where the project could decrease groundwater levels by 5 feet or more. Thus, no harm would result in that area. Similarly, there are only three active supply wells with well screens across the Dune Sand Aquifer or 180-Foot Equivalent Aquifer within the area where the project may cause groundwater levels to decrease by more than 1 foot but no more than 5 feet. These three wells are located at the Monterey Peninsula Landfill and are used for dust control. Given that the well pumps and the screens are set at least tens of feet below the existing groundwater level, a decrease in the levels of less than 5 feet would not cause injury to this overlying user. There is one landowner about one mile from the proposed slant wells, Ag Land Trust, which has reported that it operates an active well. Despite queries and efforts to obtain data on this well, no information is available, and efforts to physically locate the well have been unsuccessful. The Groundwater Resources section of this EIR concludes that this well is likely either inactive given the brackish to saline quality of the groundwater it would draw if it were screened in the 400-Foot Aquifer, or is screened in the deeper 900-Foot Aquifer, which will not be affected by the project. All in all, the project was determined not to result in a significant impact in terms of groundwater supplies either quantitatively or qualitatively. Thus, it appears reasonable to conclude that the MPWSP would not result in harm or injury to the water rights of legal users of water in the Basin in terms of fresh water supply or water quality, two of the Report's three injury criteria relative to the development of legal water rights.

Turning to the third of the three injury criteria set forth in the Report – increased pumping costs – as noted, three wells at the Monterey Peninsula Landfill are used to supply water for dust control. Based on the analysis in the Groundwater Resources section, those wells would not be adversely affected in terms of the quantity or quality of water available for dust control. However, the water levels in those wells could drop by somewhere between 1 and 5 feet, thus requiring marginally more energy to extract the water from those wells. As a physical solution to ensure that the landfill continues to enjoy the same measure of water rights as it does prior to MPWSP implementation and thus is not injured, CalAm could compensate the landfill owner for any increased pumping costs causally tied to the MPWSP. Assuming that CalAm were to compensate the owner of these wells for any increased pumping costs sustained due to the MPWSP, the well's operation would not cause injury under the Report's third injury criteria.

In light of the foregoing, it seems reasonable to conclude that the MPWSP would not cause harm or injury to Basin water rights holders such that CalAm would possess the right to withdraw water from the Basin to produce "developed water" for beneficial use and under the physical solution doctrine.

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

CalAm proposes to return to the Basin the percentage of water that is determined to come from the Basin, whether it is concluded to be brackish or fresh. The entirety of the geographical area of the Basin that would be affected by the project contains brackish water rather than fresh water. Based on the groundwater modeling and as discussed in the Groundwater Resources section, while the project may actually improve the Basin's seawater intrusion issue by drawing the seawater interface line slightly more seaward, the project is not forecasted to draw any fresh water through the MPWSP source water supply wells over the life of the project. If indeed no fresh water is withdrawn by the project, then no physical solution in the form of return to the Basin of fresh water (or other off-setting mechanism to alleviate the harm) would be required in order for CalAm to secure and maintain water rights for the project feedwater. If the water in the Basin were to become fresher in the future such that the MPWSP supply wells were drawing fresh water from the Basin, then a physical solution (such as the proposed return component of the project, discussed below) would be needed in order for CalAm to maintain rights to the Basin water for the project.[27]

In any event, the proposed project does include return to the Basin of the same amount of water that is extracted from the Basin. Not only would this plan further ensure that there is no injury to Basin groundwater users, but the Basin and its groundwater users could be benefitted by the return of fresh water to the seawater-intruded Basin.

The Report stated in this regard:

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

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

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

CalAm has identified several different options for returning water to the Basin. The primary proposed option is to provide the return water to the Castroville Seawater Intrusion Project (CSIP) pond or directly into the reclaimed water CSIP pipe for use by the agricultural users that obtain water through CSIP. Were this to occur, the clean desalinated water would be provided for agricultural use in lieu of pumping Basin water in an amount equal to the quantity of return water. Water is expected to be returned between May and October of the same calendar year as it is withdrawn (see Chapter 3, operating table) such that the senior overlying and prescriptive users would not suffer harm from loss of water. Since this return option would essentially put the Basin in a "no net loss" position in terms of water quantity and would benefit legal water users by providing fresh water for beneficial use in lieu of Basin pumping, it appears consistent with the Report and enhances the preliminary conclusion that CalAm would likely possess water rights for the project.

CalAm has identified secondary return options as injecting fresh, desalinated product water into injection wells at the CEMEX intake well site or on the same property as the desalination plant. The aquifer underlying both of these locations is currently degraded and the water is brackish. Therefore, based upon the criteria enunciated in the Report, this return option would not be favored, would waste water in a manner contrary to state constitutional policy and would likely not be considered an acceptable physical solution if one were needed due to the withdrawal at any point of fresh water. While CalAm has not proposed it as an option, it is conceivable that CalAm could return via injection into the Basin the requisite amount of brackish, pre-desalinated supply water (rather than fresh, desalinated water) in order to make the Basin whole and avoid export of Basin water. If the withdrawn supply water were indeed of the same water quality as (and no worse than) the groundwater into which the injection wells were placed such that the water would not degrade water quality in the Basin, then it could be argued that this would not be a waste of water, it would make the Basin whole, and would have the benefit of requiring less water to be withdrawn to begin with given that the desalination process requires roughly twice as much supply water as the ultimate fresh, product water. For such an option to prove viable in terms of water quality, it may be necessary to blend the brackish water with some desalinated water or to treat the brackish water to some degree.

It is also possible that CalAm could identify a different return mechanism or location than the contemplated injection wells, such as providing desalinated return water directly to a wholesaler in the Basin or an end-user in the Basin with certainty that the use of such water would offset groundwater pumping from the Basin. Such a yet-to-be-identified option that would return water to the Basin within the calendar year that the water is removed and in a manner that ensures that the water will be available for use by senior water rights holders would also appear consistent with the Report and further support a finding that the project appears at least preliminarily feasible from a water rights perspective.

2.7.3 Variant Water Rights

CalAm has proposed a variation of the purposed project (referred to as the MPWSP Variant) that would be comprised of a smaller desalination plant sized at 6.4 mgd, coupled with the purchase of water from the GWR proposed jointly by the MRWPCA and the MPWMD. The MPWSP Variant is described in detail and its impacts are evaluated in Chapter 6, MPWSP Variant of this EIR.

2.7.3.1 GWR Component

In terms of water rights for the GWR component of the Variant, the MRWPCA, the Monterey County Water Resources Agency (MCWRA), the City of Salinas, the Marina Coast Water District (MCWD), and the MPWMD have entered into a Memorandum of Understanding Regarding Source Waters and Water Recycling (MOU) (October 2014). The parties to the MOU agreed to "negotiate a Definitive Agreement to establish contractual rights and obligations of all Parties," that would include (1) protecting MCWD's recycled water right entitlement, (2) providing up to 5,292 afy of additional recycled water to MCWRA for use in CSIP, and (3) providing 3,500 afy of treated water for injection into the Seaside Basin and extraction by CalAm. The CPUC would need to approve a water purchase agreement between CalAm and the MRWPCA and/or MPWMD for CalAm to withdraw and distribute to its customers this new source of 3,500 afy. The MOU also provides for creation of a drought reserve through production, conveyance and injection of up to 200 afy of additional highly treated water during wet and normal years. The MOU sets the use of GWR source water amounts[28] as:

(1) 4,320 af for treatment and injection of GWR product water into the Seaside Basin,

(2) 5,292 af for additional crop irrigation water through CSIP, and

(3) 248 af to create product water for injection in most years to be held in drought reserve.

The MOU reflects the parties' intention that, under a Definitive Agreement, the MRWPCA would have rights to the first 4,320 af annually of the new "incremental" source waters, plus amounts in the six winter months to produce 200 af to be placed into drought reserve. The MOU also provides that Salinas agricultural wash water may be used by MRWPCA for the time period necessary to obtain an average annual amount of 4,320 af for the GWR project, but that the MRWPCA would endeavor to develop the additional supplies and transition a portion of the agricultural wash water for the benefit of MCWRA and to meet the CSIP area irrigation demands.

The source waters for the GWR project are proposed to come from the Blanco Drain, the Reclamation Ditch and Tembladero Slough. These sources are surface waters. Water rights for surface waters are governed differently than for groundwater. Removal of water from a surface water body for delivery to non-adjacent parcels constitutes an appropriative use of water that is established via a permit from the State Board Division of Water Rights (Water Code, division 2, part 2, section 1200 et seq.). An appropriative surface water right authorizes the diversion of a specified quantity of water at specific points of diversion, for a reasonable, beneficial use at

[28] Note that the source water to product water ratio for the product water to be injected in wells is 81 percent. Furthermore, each of these amounts is based upon average year conditions and actual amounts may vary based upon climate, recycled water demand and operational considerations.

specific places of use for specific purposes of use. To obtain a new appropriative water right, the appropriator must obtain a permit that details the proposed place of diversion and the intended use (Water Code, Section1260), and then must divert and beneficially use water pursuant to the permit. Once this occurs, the SWRCB may issue a water-right license, which supersedes the permit and confirms the appropriative right (Water Code, Section1610). In considering an application to appropriate water, the State Board considers a number of factors, specifically "the relative benefit to be derived from (1) all beneficial uses of the water concerned including, but not limited to, use for domestic, irrigation, municipal, industrial, preservation and enhancement of fish and wildlife, recreational, mining and power purposes, and any uses specified to be protected in any relevant water quality control plan, and (2) the reuse or reclamation of the water sought to be appropriated, as proposed by the applicant. The board may subject such appropriations to such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest, the water sought to be appropriated." Water Code section 1257. The SWRCB is guided by the policy that domestic use is the highest use and irrigation is the next highest use of water.

In April of 2014, MCWRA filed an application with the SWRCB for water rights to appropriate waters of the Blanco Drain, the Reclamation Ditch and Tembladero Slough to provide additional waters for CSIP and for domestic supplies within the Salinas Valley, Zone 2C (Water Right Application 32263). The MOU indicates that such water rights would be retained exclusively by the MCWRA, but that all MOU parties would work jointly on obtaining the water rights needed for the GWR project. On November 10, 2014, the SWRCB sent a letter stating that the application was incomplete for reasons including the following: "the nature and amount of the proposed use is not clearly stated," "no information is provided regarding the potential effect of the project on fish and wildlife or measures proposed to be taken for the protection of fish and wildlife," "no information is provided to demonstrate a reasonable likelihood that unappropriated water is available for appropriation," and "proper maps were not included." (MRWPCA, 2015)

There may be additional information on the progress of the application prior to the time that the CPUC is making a decision. Based upon the criteria for the appropriative right to be approved by the SWRCB, and the nature of the GWR project to reclaim water for beneficial domestic and agricultural purposes, at this stage, there is no reason at this point to believe that the need for a water right makes the GWR project infeasible.

2.7.3.2 Desalination Component

As to the component of the Variant that is the 6.4 mgd desalination plant supplied by slant wells on the CEMEX lands, the groundwater modeling indicates that approximately 93 to 96 percent of the source water will be seawater, leaving approximately 4 to 7 percent of the supply water that would originate in the Basin. These percentages and assumptions are the same for the MPWSP Variant as for the project evaluated above. As discussed above, no water right is needed for the seawater. Thus, all focus would be on the rights to the Basin water.

Based upon the groundwater modeling effort undertaken for this EIR, the effects of the smaller desalination plant on Basin groundwater levels would be less than the effects associated with the larger desalination plant. The furthest extent of the radius of influence would be 2.2 miles from

the supply wells. The only known active wells within this range that are screened within the Dune Sand Aquifer or the 180-Foot Equivalent Aquifer are the wells at the Monterey Peninsula Landfill that pump water for dust control. The modeling results indicate that groundwater levels in this location could decrease, but by less than one foot. Given that the pumps and screens of these wells are set tens of feet below existing groundwater levels, the wells would not be adversely impacted by the desalination plant feedwater in terms of quantity or quality of water, but the landowner could experience increased pumping costs as a result of the MPWSP. Therefore, it appears reasonable to conclude that the water rights analysis for the smaller version of the MPWSP that is part of the MPWSP Variant would be the same as that for the proposed project and that there no is indication that the MPWSP Variant would be infeasible due to lack of ability to establish water rights.

As with the larger desalination plant, CalAm proposes to return to the Basin the same quantity of water that would be removed from the Basin, using the reclaimed water CSIP pond or pipe or injection wells on the CEMEX land or on the site of the desalination plant. As discussed above for the larger plant size, returning clean water to the Basin by injection well located where the underlying groundwater is degraded would be considered wasteful and would not likely support a finding that the project facilitated an acceptable physical solution if such a physical solution were required. Based upon the Draft EIR for the GWR project, if all components of the GWR project are implemented as proposed, that project would be expected to supply all of the current need for and thus occupy the total capacity for additional water being delivered to CSIP. Thus, while in dry years the desalinated return water could readily be employed through CSIP to supply agricultural water needs in lieu of Basin pumping, CalAm would not predictably be able to use the CSIP return option. As discussed above, it is possible that CalAm could identify a different return mechanism or location, such as providing desalinated return water directly to a wholesaler in the Basin or an end-user in the Basin with certainty that the use of such water would offset groundwater pumping from the Basin.[29] Such a yet-to-be-identified option that would return water to the Basin within the calendar year that the water is removed and in a manner that ensures that the water will be available for use by senior water rights holders would appear consistent with the Report and further support a finding that the MPWSP Variant appears at least preliminarily feasible from a water rights perspective. Furthermore, if the MPWSP Variant were considered as a whole (which is the manner in which it is analyzed in this EIR), the conclusion would be even stronger. Viewed in this more global manner, the desalination plant portion of the project would withdraw water from the Basin (an estimated 700 af) and the GWR component of the project would return to the Basin within the same calendar year as the withdrawal a greater amount of water than was withdrawn (an average of 5,292 af returned via CSIP in lieu of Basin pumping). Given that the MPWSP Variant considered as a whole would add new, previously unavailable clean water to the Basin in a greater amount than the Basin would lose each year, one could conclude that it is likely that sufficient water rights would exist to support the Variant.

[29] Alternatively, as discussed for the project above, there is an argument that CalAm could return brackish MPWSP supply water to the Basin via injection wells as a means of making the Basin whole.

2.7.3.3 Effect of Agency Act

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

This section evaluates whether it appears at least preliminarily that the proposed project would be consistent with the Agency Act (including the Ordinance) such that the application of the Agency Act would not undermine the project's right to supply water and thus, impair the feasibility of the project from water rights and legal feasibility perspectives.

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

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

Report at 39. Clearly, if the Agency Act were not to apply to the project, it would not affect project feasibility in any respect.

Assuming, however, that the Agency Act would apply to the project, the Report (while acknowledging that it is not the body charged with interpreting the Agency Act) opines that the project would appear consistent with the Agency Act and the Ordinance given that the project would return to the Basin any quantity of fresh water withdrawn from the Basin. The Report states:

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

> the Project. The State Water Board is not the agency responsible for interpreting the Agency Act or MRWCA's ordinances. It should be recognized, however, that to the extent the language of the Agency Act and ordinance permit, they should be interpreted consistent with policy of article X, section 2 of the California Constitution [declaring that the waters of the state shall be put to maximum beneficial use], including the physical solution doctrine . . .

Report at 40. Therefore, it appears at least preliminary reasonable to conclude that the project would be consistent with the Agency Act and the Ordinance such that those laws would not impair project feasibility.

2.7.3.4 Effect of Annexation Agreement

In 1996, the MCWRA, the MCWD, the City of Marina, the owners of Armstrong Ranch and then owners of the CEMEX property (RMC Lonestar), entered into an *Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands* ("Annexation Agreement").[30] The agreement established a framework for management of groundwater from the Basin and included terms and conditions for the annexation of lands (including the Armstrong Ranch and CEMEX properties) to MCWRA's benefit assessment zones as a financing mechanism to fund groundwater resource protection and reduction of seawater intrusion (MCWD, et al. 1996).

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

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

Section 7.3 of the Annexation Agreement provides that "Lonestar Property annexation to the Zones will not take effect until the Lonestar Property has been approved for prior or concurrent annexation into MCWD" (MCWD, et al. 1996). Annexation of the property, now owned by

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

CEMEX, requires compliance with CEQA and discretionary approval by the Monterey County Local Agency Formation Commission (LAFCO). At its June 12, 2012 regular board meeting, the MCWD Board adopted a resolution (No. 2012-42) to initiate CEQA studies and submit to LAFCO an application for the annexation of the CEMEX property into the MCWD. However, at its November 30, 2012 meeting, counsel for the MCWD Board reported that no application to LAFCO for annexation of the CEMEX property had been submitted (MCWD, 2012). At that same meeting, the MCWD Board adopted Resolution 2012-88, which requires a super majority vote of 4 of 5 MCWD Board members or a majority of the voters within the 1975 jurisdictional boundaries of MCWD to approve any future land annexation (MCWD, 2012).

The MCWD Board considered the status of this possible annexation at its February 17, 2015 meeting. As of that date, no requisite CEQA document for annexation of the CEMEX property had been started and no LAFCO annexation application for the CEMEX property had been submitted. The Agenda Transmittal from the MCWD staff for the February 17, 2015 Board meeting identified several issues and hurdles that would impair MCWD's ability to move forward with annexation of the CEMEX property. Specifically, based upon meetings with the LAFCO Executive Director and CEMEX officials, the MCWD staff reported that annexation would also require approval of a sphere of influence amendment by LAFCO; such an amendment would need to be consistent with the City of Marina General Plan, which does not envision development of the CEMEX property in a manner that would require MCWD water service; CEMEX does not envision developing its land so as to justify provision of urban-level services by MCWD; and CEMEX would not be willing to pay to the County the fee for annexation to MCWD. In light of these facts, MCWD staff concluded that submitting the required application to LAFCO would be "costly and potentially not achievable in the end." (MCWD, 2012). As of April, 2015, MCWD has taken no further action to pursue annexation of the CEMEX property further. Therefore, with respect to the CEMEX property, the Annexation Agreement is not yet effective and the 500 afy groundwater withdrawal limitation does not apply to the proposed MPWSP. The annexation does not appear likely to occur in the foreseeable future, and thus there is no current indication that the Annexation Agreement poses a feasibility issue to the project's use of water.

Moreover, even if annexation of the CEMEX property to MCWD's benefit assessment zones were to take place in the future, triggering the 500 afy groundwater withdrawal limitation, it appears that operation of the MPWSP could still be feasible. As discussed in Section 2.7.2 above, CalAm has proposed an injection well on the CEMEX property as one option of returning to the Basin the percentage of water, if any, that the slant wells withdraw from the Basin regardless of whether that water is brackish or fresh.[31] If the return of water to the basin were accomplished on the CEMX property directly, the MPWSP would have a net-zero effect on groundwater from the CEMEX land and conceivably could operate regardless of whether the 500 afy groundwater withdrawal limitation were imposed at some point in the future.

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[31] All other proposed water return injection locations are located within the Basin and would serve the purpose of the Annexation Agreement as set forth in Section 1.1 of that Agreement by reducing seawater intrusion and protecting the groundwater resources of the Basin, thus arguably being consistent with the Annexation Agreement.

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