3.9 Hydrology and Water Quality

This section describes the environmental and regulatory settings and draft significance criteria with respect to hydrology and water quality.

3.9.1 Environmental Setting

This subsection describes the environmental setting for hydrology and water quality. For the purpose of this environmental setting analysis, the "study area" refers to the land beneath the proposed project components (i.e., temporary workspace, permanent right-of-way [ROW], and aboveground facilities). This section also provides the results of background research along the proposed project temporary workspace and permanent ROW.

3.9.1.1 Regional Setting

A Mediterranean climate is found throughout the San Diego region, with hot, dry summers and cool, wet winters. Temperatures in the region average about 65 degrees Fahrenheit, and precipitation averages 10 to 13 inches per year. In general, temperatures decrease and precipitation increases moving inland and to higher elevations (San Diego RWQCB 2016).

The study area is located in the South Coast Hydrologic Region. This region covers approximately 6.78 million acres and drains to the Pacific Ocean. It is divided into the Los Angeles, Santa Ana, and San Diego Subregions. The study area falls within the San Diego Subregion, which stretches 85 miles from Laguna Beach to the international boundary with the Republic of Mexico and 50 miles from the Pacific Ocean to the crest of the coastal mountain range (Peninsular Range). The San Diego Subregion includes the Santa Maria River, the San Luis Rey River, the San Diego River, and other drainage systems. This area is under the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB).

The San Diego Subregion is further divided into hydrologic units (HUs), hydrologic areas, and hydrologic subareas as described in the San Diego RWQCB's Basin Plan (San Diego RWQCB 2016). HUs are defined by surface drainage divides. The study area would cross the following six HUs within the San Diego Subregion: Santa Margarita, San Luis Rey, Carlsbad, San Dieguito, Penasquitos, and San Diego. These HUs are described in the following subsections. HUs are further divided into hydrologic areas, which are based primarily on surface drainage boundaries but can also be based on subsurface characteristics. Hydrologic subareas are major logical subdivisions of a hydrologic area. Hydrologic areas and subareas within the study area are described in the HU subsection below. A summary of HUs, hydrologic areas, and hydrologic subareas within the study area is provided in Table 3.9-1. In addition to the hydrologic subareas identified in Table 3.9-1, the Bear and La Jolla hydrologic subareas of the San Dieguito HU are intersected by work areas associated with de-rating Line 1600.

Table 3.9-1 Hydrologic Units, Areas, and Subareas Within the Study Area[a]

Milepost[b]				
Begin	End	Hydrologic Subareas	Hydrologic Areas (code)	Hydrologic Unit (code)
0.0	2.2	Vallecitos	DeLuz (902.2)	Santa Margarita (902.00)
2.2	2.3	Bonsall	Lower San Luis (903.1)	San Luis Rey (903.00)
2.3	2.7	Vallecitos	DeLuz (902.2)	Santa Margarita (902.00)
2.7	13.8	Bonsall	Lower San Luis (903.1)	San Luis Rey (903.00)
13.8	18.3	Moosa		
18.3	19.3	Twin Oaks	San Marcos (904.5)	Carlsbad (904.00)

Table 3.9-1 Hydrologic Units, Areas, and Subareas Within the Study Area[a]

Milepost[b]		Hydrologic Subareas	Hydrologic Areas (code)	Hydrologic Unit (code)
Begin	End			
19.3	20.9	Escondido	Escondido Creek (904.6)	
20.9	21.6	Richland	San Marcos (904.5)	
21.6	25.8	Escondido	Escondido Creek (904.6)	
25.8	26.3	Del Dios	Hodges (905.2)	San Dieguito (905.00)
26.3	26.4	Escondido	Escondido Creek (904.6)	Carlsbad (904.00)
26.4	31.3	Del Dios	Hodges (905.2)	San Dieguito (905.00)
31.3	34.6	Green		
34.6	40.6	undefined	Poway (906.2)	Penasquitos (906.00)
40.6	43.8	undefined	Miramar Reservoir (906.1)	
43.8	46.1	undefined	Miramar (906.4)	
46.1	46.6	Mission San Diego	Lower San Diego (907.1)	San Diego (907.00)

Notes:
(a) The Bear hydrologic subarea (San Dieguito hydrologic unit, Hodges hydrologic area) and La Jolla hydrologic subarea (San Dieguito hydrologic unit, Solana Beach hydrologic area) intersect regulator station removal workspaces (Line 1600 de-rating) but not the pipeline.
(b) Pipeline milepost corresponds to hydrologic subarea boundaries. Hydrologic subareas are located within hydrologic areas, which are located within hydrologic units. The pipeline would cross some hydrologic subareas, areas, and units in multiple locations.

Santa Margarita Hydrologic Unit

The Santa Margarita HU covers approximately 750 square miles in the northern portion of San Diego County and the southwestern portion of Riverside County. This HU is bounded by the Santa Ana and Santa Margarita mountains to the north and the Palomar Mountains to the south. The single major drainage in the watershed is the Santa Margarita River. Several smaller tributaries within the watershed flow to the Santa Margarita River, including Murrieta, Temecula, Roblar, Deluz, Sandia, Pechanga, and Rainbow Creeks. Of these creeks, only Rainbow Creek is within the study area. The Santa Margarita River is located over 2 miles away from the study area. The major surface water storage areas within the watershed, Vail Lake and O'Neill Lake, are both located nearly 10 miles away from the study area. Land use within the watershed is predominantly vacant land (81 percent), agricultural land (6 percent), and developed land (13 percent) (Mazor and Schiff 2007a).

The Santa Margarita HU is composed of the following nine hydrologic areas: Ysidora, Deluz, Murrieta, Auld, Pechanga, Wilson, Cave Rocks, Aguanga, and Oak Grove (Figure 3.9-1) (San Diego RWQCB 2016).

San Luis Rey Hydrologic Unit

The San Luis Rey HU covers approximately 560 square miles located entirely within San Diego County. The watershed extends from the Palomar and Monserate Mountains to the Pacific Coast. The major drainage for the watershed is the San Luis Rey River, which is interrupted by Lake Henshaw, one of the largest water storage areas in the San Diego region. Lake Henshaw is approximately 20 miles from the study area. Several tributaries flow to the San Luis Rey River, including Escondido Canal, which diverts most of the water below the dam. In addition to the Henshaw Reservoir and Escondido Canal, the Colorado River Aqueduct is another hydrologic alteration within the HU. Tributaries above the dam include the West Fork and Agua Caliente Creek. Below the dam, Pauma Creek, Moosa Creek, and Keys Creek drain important agricultural areas (Mazor and Schiff 2007b).

The San Luis Rey HU is composed of the following three hydrologic areas: Lower San Luis, Monserate, and Warner Valley (San Diego RWQCB 2016).

Carlsbad Hydrologic Unit

The Carlsbad HU covers an area of approximately 210 square miles, extending from Lake Wohlford on the east to the Pacific Ocean on the west, and from Vista on the north to Cardiff-by-the-Sea on the south. (Mazor and Schiff 2007c). The HU includes the cities of Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff-by-the-Sea, Vista, and Escondido. The area is drained by Buena Vista, Agua Hedionda, San Marcos, and Escondido Creeks.

The Carlsbad HU contains four major coastal lagoons: Buena Vista, Agua Hedionda, Batiquitos, and San Elijo. All four of these lagoons are over 10 miles from the study area.

The Carlsbad HU is composed of the following six hydrologic areas: Loma Alta, Buena Vista Creek, Agua Hedionda, Encinas, San Marcos, and Escondido Creek Has (San Diego RWQCB 2016).

San Dieguito Hydrologic Unit

The San Dieguito HU covers approximately 350 square miles from the Vulcan Mountains in the east to the Pacific Ocean. A Mediterranean climate is found in this watershed, with hot, dry summers and cool, wet winters, similar to that found throughout the San Diego region. Annual precipitation is around 10.37 inches, with the majority of rain falling between the months of October and April (Mazor and Schiff 2007d). It includes the San Dieguito River and its tributaries, along with Santa Ysabel and Santa Maria Creeks. The watershed contains two major reservoirs, Lake Hodges and Sutherland, and a smaller facility, the San Dieguito Reservoir. The watershed also contains one coastal lagoon, the San Dieguito Slough, located at the mouth of the San Dieguito River, which forms the northerly edge of the city of Del Mar.

The San Dieguito HU is divided into five hydrologic areas: Solana Beach, Hodges, San Pasqual, Santa Maria Valley, and Santa Ysabel (San Diego RWQCB 2016).

Penasquitos Hydrologic Unit

The Penasquitos HU covers approximately 170 square miles, extending west from Iron Mountain to the Pacific Ocean (Poway on the east to La Jolla on the west) (Mazor and Schiff 2007e). There are no major streams in the watershed, although it is drained by numerous creeks. Los Penasquitos Creek is the largest stream within the watershed. Miramar Reservoir, a major storage facility, contains imported Colorado River water.

The Penasquitos HU contains two coastal lagoons, Sorrento Lagoon and Mission Bay. Sorrento Lagoon is the mouth of Penasquitos Creek and empties into the ocean near the northern boundary of the city of San Diego. Mission Bay and the mouth of the San Diego River form a 4,000-acre aquatic park. Water quality within Mission Bay generally is lower than that of the coastal ocean water due to the poor flushing characteristics of the bay and the input of nutrient material from storm water runoff. Sludge from the city of San Diego's Point Loma plant is piped to an island in Mission Bay (Fiesta Island) for use as a soil conditioner and fertilizer.

The Penasquitos HU is composed of the following five hydrologic areas: Miramar Reservoir, Poway, Scripps, Miramar, and Tecolote (San Diego RWQCB 2016).

San Diego Hydrologic Unit

The San Diego HU covers an area of approximately 440 square miles from the Cuyamaca Mountains to the Pacific Coast. The San Diego River is the main drainage in the watershed. El Capitan, San Vicente, Cuyamaca, Jennings, and Murray Reservoirs are the major storage facilities. San Vicente, Murray, Jennings, and Murray Reservoirs store mainly Colorado River water, whereas El Capitan Reservoir

mainly stores local runoff and some Colorado River water. Cuyamaca Reservoir stores only local runoff. (Mazor and Schiff 2007f)

Much of the impounded water is used to serve major population centers, including a portion of the San Diego metropolitan area and the communities of El Cajon, Santee, Lakeside, Alpine, and Julian.

The San Diego HU is composed of the following four hydrologic areas: Lower San Diego, San Vicente, El Capitan, and Boulder Creek (San Diego RWQCB 2016).

3.9.1.2 Groundwater

Groundwater (and surface water) in this area flows primarily from the mountainous east towards the west and the Pacific Ocean. Sources of groundwater recharge in the San Diego Subregion include precipitation, irrigation returns, infiltration of reservoir and river water, and engineered recharge. Groundwater is discharged mainly through pumping wells (Wright and Belitz 2011). Line 3602 would cross the following groundwater basins within the San Diego Subregion, from north to south: San Luis Rey Valley (9-07), Escondido Valley (9-09), and Poway Valley (9-13) (Figure 3.9-2). Line 49-31C replacement activities, associated with de-rating Line 1600, would cross the Poway Valley groundwater basin along the Line 3602 route.

Groundwater in basins of the San Diego Subregion has mainly calcium and sodium cations and bicarbonate and sulfate anions. Local impairments of groundwater by nitrate, sulfate, and total dissolved solids (TDS) are present. Camp Pendleton Marine Base, in the northwestern part of this subregion, is on the U.S. Environmental Protection Agency (EPA) National Priorities List for soil and groundwater contamination for many constituents (DWR 2003).

San Luis Rey Valley Groundwater Basin

The San Luis Rey Valley groundwater basin underlies an east-west-trending alluvial valley associated with the San Luis Rey River (San Diego RWQCB 2016). The basin is bounded on the east, northeast, and southeast by impermeable Mesozoic granitic and Pre-Cretaceous metamorphic rocks (San Diego RWQCB 2016). In the northwest and southwest of the lower portion of the basin, alluvium is bounded by the semi-permeable Eocene marine deposits and Tertiary non-marine deposits (San Diego RWQCB 2016). The basin is bounded on the west by the Pacific Ocean (San Diego RWQCB 2016). The study area crosses the San Luis Rey Valley groundwater basin between Line 3602 Milepost (MP) 8 and MP 10, and again at MP 13 (Figure 3.9-2).

The primary aquifer in this basin is Quaternary and younger alluvium, with sands and gravels providing the most production within the alluvial materials. The alluvium averages 200 feet in thickness within the basin. The alluvial aquifer overlies the La Jolla Group, which also serves as a somewhat less important aquifer. The La Jolla Group consists of marine terrace deposits of partly consolidated sandstone, mudstone, siltstone, and shale. The aquifer is estimated to be 1,650 feet thick.

The San Luis Rey Valley groundwater basin is recharged by precipitation, imported irrigation water applied to upland areas, and storm-flow in the San Luis Rey River and its tributaries. Regional groundwater flows toward the Pacific Ocean. Local flows can vary widely. The estimated total storage capacity for this basin is 240,000 acre-feet (DWR 1975).

Water in this basin is of calcium-bicarbonate, calcium sulfate-bicarbonate, and calcium-sulfate types (DWR 2004). The Department of Health Services data for 19 wells show a TDS content of 530 to 7,060 milligrams per liter (mg/L), with an average of approximately 1,258 mg/L. Values for TDS range from

960 to 3,090 mg/L in 1983 (Izbicki 1985). Electrical conductivity readings for the basin range from 500 to 1,300 micromhos (DWR 2004).

Escondido Valley Groundwater Basin

The Escondido Valley groundwater basin underlies a northeast-trending valley drained by Escondido Creek located in central San Diego County. The contact of residuum with impermeable Cretaceous granitic rocks and pre-Cretaceous metamorphic rocks bounds the basin (San Diego RWQCB 2016). Line 3602 would cross the Escondido Valley groundwater basin between MP 23 and MP 26.

The primary aquifer in this basin is Quaternary age residuum. Residuum is produced by in-place weathering of crystalline basement rocks. Quaternary alluvium also contains water but is confined to the course of Escondido Creek and is probably not thick enough to be water bearing (DWR 1975). While groundwater production in this basin is largely from residuum, many wells extract groundwater from fractures in the underlying crystalline rocks (DWR 1967). The estimated total storage capacity is 24,000 acre-feet (DWR 1975).

Groundwater in this basin is generally sodium chloride in type, with subordinate amounts of magnesium, calcium, bicarbonate, and nitrate ions (DWR 1967). TDS content ranges from 250 to more than 5,000 milligrams per liter (DWR 1967). Local sources of groundwater in this basin are categorized as suitable to inferior for domestic use. The water categorized as inferior typically contains high nitrate, TDS, or sulfate content (DWR 1967).

Poway Valley Groundwater Basin

The Poway Valley groundwater basin underlies a portion of Poway Valley in west central San Diego County. The basin is bounded by impermeable rocks of the Peninsular Ranges. Line 3602 would cross the Poway Valley groundwater basin between MP 38 and MP 39.

The primary water-bearing units within this basin are alluvium and residuum; groundwater is also produced from the Poway Group. The alluvium consists of unconsolidated silt, sand, and cobbles derived from local sources (Kennedy and Peterson 1975). Thickness ranges from 10 to 75 feet, with an average of 40 feet (Evenson 1989). Residuum reaches approximately 70 feet in thickness (DWR 1967).

The Eocene Poway Group is composed of the Stadium Conglomerate overlain by the Mission Valley Formation, followed by the Pomerado Conglomerate (Kennedy and Peterson 1975). The Stadium and Pomerado Conglomerates, which are lithologically similar, consist of a cobble conglomerate with a coarse-grained sandstone matrix. Sandstone lenses may constitute as much as 50 percent of the units (Evenson 1989). The Mission Valley Formation is composed of marine, lagoonal, and nonmarine sandstone. The sandstone is loosely consolidated, with some carbonate-cemented beds (Kennedy and Peterson 1975).

Natural recharge of the basin occurs from direct precipitation on the valley floor and infiltration along Poway Creek, which flows into the basin from the east. Septic tank effluent and irrigation waters also provide some recharge. The use of septic tanks is limited in the basin and, therefore, is only a minor contributor. Groundwater flows generally to the west, towards Los Penasquitos Canyon in the Soledad basin.

Groundwater in this basin is mainly sodium chloride in character and ranges in TDS from approximately 750 to 1,500 milligrams per liter (DWR 1967). Calcium bicarbonate character water is found in wells near Beeler Creek (Evenson 1989). Water from one public supply well was measured as having a TDS concentration of 610 mg/L. High chloride concentration results in marginal to inferior ratings for

irrigation use in some parts of the basin (DWR 1967). A marginal rating for domestic use in some parts of the basin is given because of high TDS.

Groundwater Supply Wells

Public and private groundwater supply wells provide potable water for some residents of San Diego County. Through coordination with the San Diego County Department of Environmental Health, the applicants identified 10 public and private groundwater supply wells within 150 feet of Line 3602 (Table 3.9-2). The applicants did not identify any additional public or private groundwater supply wells within 150 feet of the areas associated with de-rating Line 1600.

Table 3.9-2 Groundwater Supply Wells within 150 Feet of Line 3602[(a)]

Well Number	Assessor's Parcel Number	Approximate Distance to Line 3602 (feet)	Approximate Milepost
21136	102-650-05-00	100	0.1
21342	108-031-02-00	72	2.8
376	108-031-02-00	129	2.8
435	108-411-01-00	96	6.1
2	108-411-02-00	91	6.2
979	108-411-02-00	77	6.3
436	108-400-15-00	80	6.6
19542	185-363-20-00	50	15.4
760	172-091-27-00	50	15.5
10276	273-630-11-00	39	32.5

Note:
(a) Well locations were identified by the applicants through coordination with San Diego Department of Public Health.

Groundwater Quality

Development of a statewide Ground-Water Ambient Monitoring and Assessment (GAMA) program is in progress in California. The program is designed to identify and increase understanding of risks to groundwater resources. Groundwater has been and continues to be sampled at many locations across California to characterize constituents and identify trends in groundwater quality. The results of these tests are providing information for water agencies to address a variety of issues ranging from local water supply to statewide resource management (SWRCB 2017a).

The GAMA program was developed in response to the Groundwater Quality Monitoring Act of 2001 (Sections 10780-10782.3 of the Water Code), a public mandate to assess and monitor the quality of groundwater used as public supply for municipalities in California. The State Water Resources Control Board (SWRCB) is implementing the GAMA program in coordination with the U.S. Geological Survey (USGS) and Lawrence Livermore National Laboratory.

The USGS is the technical lead for the Priority Basin Project (PBP), which is part of the GAMA program. The GAMA PBP is a collaborative effort between the California SWRCB, the USGS, and the Lawrence Livermore National Laboratory. Priority Basins are groundwater basins that account for over 90 percent of all groundwater used in California. Both deep and shallow aquifers are being studied as part of the program (SWRCB 2017a). As part of the PBP, the USGS published the results of a 2004 study of groundwater quality in the San Diego Drainages Hydrogeologic Province (Wright and Belitz 2011). The study was designed to provide an assessment of untreated-groundwater quality in the primary aquifer systems within the study unit. The study unit consists of four study areas: Temecula Valley, Warner Valley, Alluvial Basins, and Hard Rock. As described above, the study area for the proposed project is

within the San Luis Rey Valley, Escondido Valley, and Poway Valley groundwater basins, which are all part of the Alluvial Basins study area for the GAMA PBP. The following paragraphs summarize findings of the 2004 study for the Alluvial Basins study area (Wright and Belitz 2011).

The water-bearing units of the Alluvial Basins are Quaternary age alluvium and residuum. Sources of groundwater recharge include percolation of precipitation, river and stream runoff, agricultural and domestic returns, discharge of wastewater to rivers, and septic systems. Groundwater is discharged primarily through groundwater pumping.

Inorganic constituents with health-based benchmarks (nutrients, trace elements, and radioactive constituents) were high in 17.6 percent of the primary aquifers in the Alluvial Fill study areas. The results for constituents such as vanadium, arsenic, and boron in groundwater were attributed to natural sources (dissolution of rocks). In addition, elevated concentrations of boron and TDS had a significant positive correlation to land use. Boron was correlated with urban land use and TDS with agricultural land use in the San Diego study unit, thus indicating potential anthropogenic sources such as sewage and industrial waste for boron and agricultural irrigation for TDS. Concentrations of manganese and iron were also found to be high in 28.6 percent and 14.3 percent of alluvial aquifers, respectively. This observation was also attributed to natural sources such as the dissolution of rock.

Organic constituents with health-based benchmarks were detected at high relative concentrations in 3.0 percent of the primary aquifers in the Alluvial Fill study areas. The Alluvial Basins was the only study area in which these constituents were detected at a high relative concentration. Solvents, however, were not detected at high relative concentrations in the Alluvial Fill study areas, but were detected at moderate relative concentrations in 3.0 percent of the primary aquifers. A positive correlation of the sum of solvent concentrations to urban land use was significant in the San Diego study unit. Gasoline components, including benzene and methyl tert-butyl ether, were detected at high relative concentrations in 3.0 percent of the primary aquifers in the Alluvial Fill study areas. All detections of herbicides were observed at low relative concentrations in the Alluvial Fill study areas.

The Chatham Brothers Barrel Yard, identified as a potential source of groundwater contamination during scoping, would be located nearly 2 miles from the study area and is not within groundwater basins that would be crossed by the proposed project (California Department of Toxic Substances Control. 2014).

3.9.1.3 Surface Water

Waterbodies

Line 3602 would cross several surface waterbodies, as identified by the National Hydrography Dataset, including Rainbow Creek, San Luis Rey River, Moosa Creek, Vista Canal, Reidy Canyon Creek, Escondido Creek, Lake Hodges/San Dieguito River, Poway Creek, Beeler Creek, San Diego Aqueduct, Second San Diego Aqueduct, and Rose Creek (Figure 3.9-3; Table 3.9-3). The applicants identified additional drainage and wetland features that are potentially jurisdictional waters of the United States and the state in wetland and waterway investigations completed in accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008). No designated wild and scenic rivers would be crossed by the proposed project. Line 49-31C replacement activities, associated with de-rating Line 1600, would cross two surface streams along the Line 3602 route.

Table 3.9-3 National Hydrology Dataset Named Streams within the Study Area

Stream Name	Stream Type	Project Feature(s)
Rainbow Creek	Intermittent Stream/River	Line 3602
San Luis Rey River	Artificial Path	Line 3602
Moosa Creek	Ephemeral Stream/River	Line 3602
Vista Canal	Canal/Ditch	Line 3602
Reidy Canyon Creek	Ephemeral Stream/River	Line 3602
Escondido Creek	Intermittent Stream/River	Line 3602
Lake Hodges/San Dieguito River	Intermittent Stream/River	Line 3602, Staging Area/Laydown Yard 6 - Lake Hodges West
Poway Creek	Intermittent Stream/River	Line 3602, De-Rating Line 1600
Beeler Creek	Intermittent Stream/River	Line 3602
San Diego Aqueduct	Pipeline: Water	Staging Area/Laydown Yard #1 Rainbow Station Yard
Second San Diego Aqueduct	Pipeline: Water	Line 3602, Staging Area/Laydown Yard #1 Rainbow Station Yard
Rose Creek	Ephemeral Stream/River	Line 3602

Surface Water Quality

Under Section 303(d) of the Clean Water Act (CWA), states identify waterbodies as impaired by certain pollutants. Five listed impaired waterbodies would be within the study area: Escondido Creek, Rose Creek, Rainbow Creek, Keys Creek, and Poway Creek (Table 3.9-4).

Table 3.9-4 Impaired Waterbodies within the Study Area

Stream Name	Pollutant	Proposed Total Maximum Daily Load (TMDL) Completion Date
Escondido Creek	Dichlorodiphenyltrichloroethane (DDT) Enterococcus Bacteria Fecal Coliform Manganese Nitrogen, Total Phosphate Selenium Sulfates Total Dissolved Solids Total Nitrogen as N Toxicity	TMDL needed
Rose Creek	Selenium Toxicity	TMDL needed
Rainbow Creek	Iron Nitrogen Phosphorus Sulfates Total Dissolved Solids	TMDL needed TMDL completed TMDL completed TMDL needed TMDL needed
Keys Creek	Selenium	TMDL needed
Poway Creek	Selenium Toxicity	TMDL needed

Rainbow Creek is the only waterbody within the study area that has designated total maximum daily load (TMDL) restrictions. Rainbow Creek is included on the CWA 303(d) list for phosphorus and nitrogen

impairment and associated TMDLs. Line 3602 would cross two reaches of Rainbow Creek that are subject to TMDL restrictions.

Flood Zones and Dam Inundation Areas

A Federal Insurance Rate Map was developed by the Federal Emergency Management Agency (FEMA) for San Diego County, California. The map identifies locations in the study area that are subject to a 100-year flood hazard risk, or inundation from flooding at least once over 100 years. Figure 3.9-4 shows the locations in the study area that are subject to a 100-year flood hazard risk. Line 3602 would cross nine areas designated as 100-year flood zones. Activities associated with de-rating Line 1600 would occur in two areas designated as 100-year flood zones.

The following types of flood zone designations are present within the study area:

- Zone A - Area with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. No depths or base flood elevations have been determined for these areas.
- Zone AE - Area of high flood risk where the base flood elevations have been determined.
- Zone X - Area of moderate to low flood hazard located outside the 100-year floodplain, and in some cases outside the 500-year floodplain.

The study area is located within inundation areas for dam failures for the following five dams:

- Henshaw Dam - Constructed in 1923 on the San Luis Rey River above the cities of Escondido and Vista.
- Turner Dam - Built in 1971 in the Moosa Creek Canyon.
- Lake Wohlford Dam - Constructed in 1922 on Escondido Creek. The dam has been proposed for replacement, but plans are on hold.
- Dixon Dam - Built in 1970 on a tributary to Escondido Creek.
- Lake Hodges Dam - Built in 1918 on the San Dieguito River.

3.9.2 Regulatory Setting

This section summarizes federal, state, and local laws; regulations; and standards that govern hydrology and water quality.

3.9.2.1 Federal

The Clean Water Act (Title 33, § 1251 et seq. of the United States Code)

The 1972 Federal Water Pollution Control Act and its 1977 amendments, collectively known as the CWA, established national water quality goals and the basic structure for regulating discharges of pollutants into the waters of the United States.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters (i.e., waters that exceed applicable water quality standards). The law requires that these jurisdictions establish priority rankings for waters on the lists and develop TMDLs for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The SWRCB and RWQCBs engage in ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements.

On December 5, 2013, the EPA announced a new collaborative framework for implementing the CWA Section 303(d) Program with States – A Long-Term Vision for Assessment, Restoration, and Protection under the CWA Section 303(d) Program. This vision reflects collaboration among states and the EPA, which began in August 2011. While it provides a new framework for implementing the CWA 303(d) Program, it does not alter state and EPA responsibilities or authorities under the CWA 303(d) regulations.

In addition, under CWA Section 401, every applicant for a federal permit or license for any activity that may result in discharge to waters of the United States must obtain from the state a Water Quality Certification that the proposed activity would comply with state water quality standards. In California, the RWQCBs administer the Section 401 Water Quality Certification Program, though the SWRCB issues certifications for multi-region projects (e.g., roads, pipelines, or transmission lines crossing regional boundaries).

As authorized by Section 402 of the CWA, the SWRCB administers the statewide National Pollution Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit) (Order 2009-0009-DWQ [as amended by 2010-0014-DWQ and 2012-0006-DWQ]), which covers a variety of construction activities that could result in wastewater discharges. Applicants obtain coverage under the SWRCB Construction General Permit for projects that disturb more than 1 acre of land by filing a Notice of Intent with the SWRCB, developing a Storm Water Pollution Prevention Plan (SWPPP), and implementing water quality monitoring activities, as required.

Wetlands, drainages, creeks, and streams are generally subject to the jurisdiction of the USACE under Section 404 of the CWA as waters of the United States. By the USACE's definition, all aquatic or riverine habitats between the "ordinary high water mark" of rivers, creeks, and streams are potentially considered "waters of the United States" and may fall under USACE jurisdiction. Any discharge of dredged or fill material into waters of the United States, including wetlands, requires the acquisition of a permit from the USACE pursuant to Section 404 of the CWA, which in turn requires a Section 401 Water Quality Certification from the state.

Safe Drinking Water Act of 1974 (42 United States Code Section 300f et seq.)

The Safe Drinking Water Act was passed in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996, and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. The Safe Drinking Water Act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. It also mandates the development of a Groundwater/Wellhead Protection Program by each state in order to protect groundwater resources that serve as a public drinking water source.

Rivers and Harbors Appropriation Act Section 10

Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 United States Code § 401 et seq.) requires a permit and USACE approval for regulated activities conducted below the ordinary high water elevation of navigable waters of the United States. This includes the placement/removal of structures, work involving dredging, disposal of dredged material, filling, excavation, or any other disturbance of soils/sediments or modification of a navigable waterway.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) was enacted in 1968 to provide a federal program for participating communities to purchase flood insurance. The NFIP is administered by FEMA, an agency within the Department of Homeland Security. Participation in the NFIP is based on an agreement between

local communities and the federal government, which provides that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available within the community as a financial protection against flood losses.

In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories by producing Flood Hazard Boundary Maps, Flood Insurance Rate Maps, and Flood Boundary and Floodway Maps. Several types of flood hazard areas are commonly identified on these maps. One is a Special Flood Hazard Area, a term that designates any area with a 1 percent chance of being inundated by a flood in any given year (also referred to as the base flood elevation).

Marine Corps Air Station Miramar Integrated Natural Resources Management Plan

The Natural Resources Management Chapter of the Marine Corps Air Station (MCAS) Miramar Integrated Resources Management Plan presents policies, objectives, and projects necessary for MCAS Miramar to achieve the Marine Corps' natural resource management goals.

General Vegetation Management and Soil Conservation

Marine Corps Order 5090.2A (para. 11104.2d) states, "The Marine Corps shall manage its lands and waters to control and prevent soil erosion, soil loss, and aquatic sedimentation and to preserve natural resources by conducting surveys and implementing soil conservation measures. Construction projects shall be designed to eliminate post construction soil erosion, and altered or degraded landscapes and associated habitats shall be restored and rehabilitated whenever practicable." MCAS Miramar aims to maintain watershed productivity, quality, and function through an effective non-point-source pollution control program (including soil erosion control and maintenance of vegetative cover). Planned actions include soil erosion control through erosion and vegetation restoration projects and watershed and floodplain management actions that minimize flooding, reduce sedimentation, and maintain riparian ecosystems.

General Wetland Management

MCAS Miramar supports wetlands, including vernal marshes, fresh water marshes, and portions of some riparian vegetation types and edges of open water ponds. Marine Corps Order 5090.2A (para. 11104.2a) states, "The Marine Corps will comply with the national goal of no net loss of wetlands and will avoid loss of size, function, and value of wetlands. In addition, the Marine Corps will preserve and enhance the natural and beneficial values of wetlands while conducting its activities." MCAS Miramar has set an objective to identify and manage wetlands on the base to maintain no net loss of wetland values. This is achieved through ensuring compliance with existing and future Section 404 CWA permitting requirements.

3.9.2.2 State

Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.)

The Porter-Cologne Act Water Quality Control Act (Porter-Cologne Act) (California Water Code, Division 7), passed in 1969, regulates surface water and groundwater quality in the state and also assigns the SWRCB responsibility for implementing CWA Sections 401 (Water Quality Certification), 402 (NPDES), 303(d) (List of Impaired Water Bodies), and 305(b) (Report on the Quality of Waters in California). The SWRCB has delegated its authority to the nine RWQCBs. The SWRCB and RWQCBs are responsible for issuing permits for certain point source discharges and for regulating construction and storm water runoff.

Under the Porter-Cologne Act and the CWA, the SWRCB and RWQCBs are responsible for developing and implementing regional basin plans to regulate all pollutants or nuisance discharges that may affect

either surface water or groundwater. Basin plans are prepared by the RWQCBs to establish water quality standards for both surface and groundwater bodies within their respective jurisdictions. Basin plans designate beneficial uses for surface and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses, and describe implementation programs to protect all waters in the region. Under Section 303(d) of the CWA, each RWQCB develops a list of impaired waterbodies in which water quality is impeding the attainment of beneficial uses. The RWQCBs regulate discharges to "waters of the State" within their respective jurisdictions through administration of NPDES permits, Waste Discharge Requirements, and CWA Section 401 Water Quality Certifications (which ensure that projects with federal 404 permits do not violate state water quality standards). Construction projects also may require a Low Threat Discharge Permit covering construction activities related to discharges from hydrostatic pipeline testing and construction dewatering.

Surface Water Ambient Monitoring Program

The SWRCB established the Surface Water Ambient Monitoring Program to monitor and assess waters throughout California. Watershed reports have been produced through this program that assess the ecological health of each HU or watershed based on water chemistry, water and sediment toxicity, invertebrate tissues, and benthic macroinvertebrate tissues. (State Water Resources Control Board 2017b)

Storm Water Discharge Regulations

The SWRCB administers the federal NPDES program authorized by CWA Section 402. Under that program, the SWRCB has adopted a general NPDES permit for construction activities that disturb more than 1 acre of land (NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities [2012], Construction General Permit, Order No. 2012-0006-DWQ, NPDES No. CAS000002). The Construction General Permit applies to discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities. To comply with the general permit, a Notice of Intent (NOI) must be filed with the RWQCB, and a SWPPP must be implemented at the commencement of grading and remain in effect until construction is completed. Construction-related pollutants must be controlled by implementing the best available technology economically achievable and best conventional pollutant control technology (the Best Available Technology/Best Conventional Pollutant Control Technology standard). The Construction General Permit also requires effluent monitoring and reporting, receiving water monitoring and reporting, a rain event action plan, project site soil characteristics and monitoring, new and redevelopment performance standards for water quality and hydromodification impacts, technology-based numeric action levels, and risk-based permitting.

The Construction General Permit includes a Rainfall Erosivity Waiver process for sites that are between 1 and 5 acres and that demonstrate that construction activities will have no adverse water quality impacts. Site operators that meet the acreage requirements may seek a Rainfall Erosivity Waiver by submitting an NOI and Sediment Risk analysis to the applicable RWQCB certifying that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five. Compliance with permit requirements is generally waived in the event that an NOI is approved by the RWQCB.

The SWRCB has also adopted Industrial General Permit 2014-0057-DWQ to regulate discharges of storm water. The Industrial General Permit includes online reporting, monitoring, minimum best management practices (BMPs), numerical action levels and response actions, and other new requirements. Attachment A to the new permit states that "Oil and Gas/Mining Facilities," including "oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with any overburden, raw material, intermediate products, finished products, by-products, or waste products located on the site of such operations" are subject to coverage. Potentially covered facilities can file a Notice of Nonapplicability supported by a technical report prepared by a qualified engineer that demonstrates permit coverage is not

required because: (a) the facility is designed to contain and avoid any discharge of storm water to waters of the United States; or (b) the facility is located in a basin or other location that is not hydrologically connected to waters of the United States. Facilities subject to coverage may also file a No Exposure Certification and seek to obtain conditional exclusion from certain permit requirements for facilities that have no exposure of industrial activities and materials to storm water (40 Code of Federal Regulations 122.26(g)).

Senate Bill 610

Senate Bill 610, adopted in 2002, requires agencies to prepare Water Supply Assessments for qualifying projects, to determine whether total projected water supplies would meet the projected water demand from a project. Water Supply Assessments build on water demand and supply projection information contained in the Urban Water Management Plans that applies to a project.

Sustainable Groundwater Management Act

In 2014, California enacted the Sustainable Groundwater Management Act (SGMA) (Water Code § 10720 et seq.). The SGMA, and related amendments to California law, require that all groundwater basins designated as high or medium priority in the California Department of Water Resources California Statewide Groundwater Elevation Monitoring program, and that are subject to critical overdraft conditions, be managed by a groundwater sustainability agency (GSA). The GSA is required to develop a new groundwater sustainability plan (GSP), or a coordinated set of GSPs, to manage the basin for long-term sustainability. The GSPs for high- and medium-priority basins that are subject to critical overdraft conditions must be completed by January 31, 2020. The GSPs for high- and medium-priority basins that are not subject to critical overdraft conditions must be completed by January 31, 2022. The SGMA does not apply to basins that are managed under a court-approved adjudication, or to low- or very low-priority basins.

A GSA has the authority to require registration of groundwater wells, measure and manage extractions, require reports and assess fees, and request revisions of basin boundaries, including establishing new subbasins. The preparation of a GSP by a GSA is exempt from the California Environmental Quality Act (CEQA). Each GSP must include a physical description of the covered basin, such as groundwater levels, groundwater quality, subsidence, information on groundwater-surface water interaction, data on historical and projected water demands and supplies, monitoring and management provisions, and a description of how the plan will affect other plans, including city and county general plans.

The SGMA defines groundwater as “water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.” A groundwater extraction facility is defined as “a device or method for extracting groundwater from within a basin” (Water Code § 10721(g–h)). GSPs are reviewed by the California Department of Water Resources to ensure that, over a period of 20 years, “sustainable groundwater management” is achieved. As defined by the SGMA, “sustainable groundwater management” means that groundwater use will not cause any of the following “undesirable results”:

- Chronic lowering of groundwater levels (not including overdraft during a drought, if a basin is otherwise managed);
- Significant and unreasonable reductions in groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degradation of water quality;
- Significant and unreasonable land subsidence; and

- Surface water depletions that have significant and unreasonable adverse impacts on beneficial uses. (Water Code Section 10721(w))

Based on the San Luis Rey Valley basin's designation as a "medium priority" but not "critically overdrafted," the basin's GSP must be completed by January 2022. San Diego County is in the process of developing the GSP for the San Luis Rey Valley basin. The Escondido Valley and Poway Valley groundwater basins are designated as "very low priority basins" and therefore are not required to comply with SGMA requirements (San Diego County, Department of Planning and Development Services 2018).

California Fish and Game Code Section 1601

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To achieve these ends, Section 1601 of the California Fish and Game Code requires an entity to notify the CDFW of any proposed activity that may substantially modify a river, stream, or lake, including ephemeral streams, desert washes, and watercourses with a subsurface flow. If the CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement between the entity proposing the activity and the CDFW is required.

3.9.2.3 Regional and Local

Regional

San Diego Regional Water Quality Control Board Regional Municipal Storm Water Permit

The San Diego Regional Storm Water Permit (San Diego RWQB Order Number R9-2013-0001, as amended by Order Numbers R9-2015-0001 and R9-2015-0100) is a Phase I MS4 storm water permit covering the County of San Diego, the City of San Diego, and numerous other jurisdictions in the San Diego region. The San Diego Regional Storm Water Permit prohibits "discharges from MS4s in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance in receiving waters of the state." The San Diego Regional Storm Water Permit requires that the County develop new and updated Runoff Management Plans and Programs, including Water Quality Improvement Plans and a Jurisdictional Runoff Management Plan (San Diego County, Department of Public Works 2016). In unincorporated San Diego County, the permit requirements are generally implemented under the authority of the Watershed Protection, Stormwater Management, and Discharge Control Ordinance (WPO), which is described below under "County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance."

San Diego Association of Governments Regional Comprehensive Plan

The San Diego Association of Governments (SANDAG) Regional Comprehensive Plan includes objectives relating to protecting and restoring the integrity of watersheds and waterbodies located in San Diego County (SANDAG 2006). The implementation of land use policies designed to improve water quality, as well as other pollution measures, is necessary to prevent potential water quality degradation due to the rate of growth in these watersheds. The plan describes its water quality policy objectives as follows:

Water Quality Policy Objectives:

- *Restore, protect, and enhance the water quality and the beneficial uses of local coastal waters, inland surface waters, groundwaters, and wetlands.*
- *Reduce or eliminate pollutants at their source before they enter our regions waterbodies.*
- *Protect local drinking water sources.*

County of San Diego

County of San Diego General Plan

The Conservation and Open Space Element (COS) of the San Diego County General Plan includes the following policies relevant to the proposed project (County of San Diego 2015a):

Goal COS-4. Water Management. *A balanced and regionally integrated water management approach to achieve the long-term viability of the County's water quality and supply.*

- *Policy COS-4.3 Stormwater Filtration. Maximize stormwater filtration and/or infiltration in areas that are not subject to high groundwater by maximizing the natural drainage patterns and the retention of natural vegetation and other pervious surfaces. This policy shall not apply in areas with high groundwater, where raising the water table could cause septic system failures, moisture damage to building slabs, and/or other problems.*
- *Policy COS-4.4 Groundwater Contamination. Require land uses with a high potential to contaminate groundwater to take appropriate measures to protect water supply sources.*

GOAL COS-5 Protection and Maintenance of Water Resources. *Protection and maintenance of local reservoirs, watersheds, aquifer-recharge areas, and natural drainage systems to maintain high-quality water resources.*

- *Policy COS-5.1 Impact to Floodways and Floodplains. Restrict development in floodways and floodplains in accordance with policies in the Flood Hazards section of the Safety Element.*
- *Policy COS-5.2 Impervious Surfaces. Require development to minimize the use of directly connected impervious surfaces and to retain stormwater run-off caused from the development footprint at or near the site of generation.*
- *Policy COS-5.3 Downslope Protection. Require development to be appropriately sited and to incorporate measures to retain natural flow regimes, thereby protecting downslope areas from erosion, capturing runoff to adequately allow for filtration and/or infiltration, and protecting downstream biological resources.*
- *Policy COS-5.4 Invasive Species. Encourage the removal of invasive species to restore natural drainage systems, habitats, and natural hydrologic regimes of watercourses.*
- *Policy COS-5.5 Impacts of Development to Water Quality. Require development projects to avoid impacts to the water quality in local reservoirs, groundwater resources, and recharge areas, watersheds, and other local water sources.*

The San Diego County General Plan Land Use Element (LU) includes the following land use policies relevant to the proposed project:

GOAL LU-6 Development – Environmental Balance*. A built environment in balance with the natural environment, scarce resources, natural hazards, and the unique local character of individual communities.*

- *Policy LU-6.5 Sustainable Stormwater Management: Ensure that development minimizes the use of impervious surfaces and incorporates other Low Impact Development techniques as well as a combination of site design, source control, and stormwater best management practices, where applicable and consistent with the County's LID Handbook.*

- *Policy LU-6.9: Development Conformance with Topography. Require development to conform to the natural topography to limit grading; incorporate and not significantly alter the dominant physical characteristics of a site; and to utilize natural drainage and topography in conveying stormwater to the maximum extent practicable.*
- *Policy LU-6.10 Protection from Hazards. Require that development be located and designed to protect property and residents from the risks of natural and man-induced hazards.*

GOAL LU-13 Adequate Water Quality, Supply, and Protection*. A balanced and regionally integrated water management approach to ensure the long-term viability of San Diego County's water quality and supply.*

- *Policy LU-13.1 Adequacy of Water Supply. Coordinate water infrastructure planning with land use planning to maintain an acceptable availability of a high quality sustainable water supply. Ensure that new development includes both indoor and outdoor water conservation measures to reduce demand.*
- *Policy LU-13.2 Commitment of Water Supply. Require new development to identify adequate water resources, in accordance with State law, to support the development prior to approval.*

The San Diego County General Plan Safety Element (S) includes the following policies relevant to the proposed project:

GOAL S-8 Reduced Landslide, Mudslide, and Rock Fall Hazards. *Minimized personal injury and property damage caused by mudslides, landslides, or rock falls.*

- *Policy S-8.1 Landslide Risks. Direct development away from areas with high landslide, mudslide, or rock fall potential when engineering solutions have been determined by the County to be infeasible.*
- *Policy S-8.2 Risk of Slope Instability. Prohibit development from causing or contributing to slope instability.*

GOAL S-10 Floodway and Floodplain Capacity*. Floodways and floodplains that have acceptable capacity to accommodate flood events.*

- *Policy S-10.4 Stormwater Management. Require development to incorporate low impact design, hydromodification management, and other measures to minimize stormwater impacts on drainage and flood control facilities.*
- *Policy S-10.5 Development Site Improvements. Require development to provide necessary on- and off-site improvements to stormwater runoff and drainage facilities.*
- *Policy S-10.6 Stormwater Hydrology. Ensure development avoids diverting drainages, increasing velocities, and altering flow rates to off-site areas to minimize adverse impacts to the area's existing hydrology.*

Rainbow Community Plan

The Rainbow Community Plan is included in the County of San Diego General Plan (County of San Diego 2014). The Rainbow Community Plan COS contains the following policies that address designated plant and animal habitats, agriculture, waterbodies, open space, and other scientific resources within the Community Plan Area:

COS Goal 1.3. The preservation, protection, and enhancement of Rainbow's scenic resources.

- *COS Policy 1.3.2. Preserve open space areas such as steep slopes, canyons, floodplains, agricultural lands, and scenic views.*
- *COS Policy 1.3.3: Require development to preserve the natural terrain and to minimize grading.*
- *COS Policy 1.3.4. Utilize types and patterns of development that minimize water pollution, air pollution, fire hazard, soil erosion, silting, slide damage, flooding and limit hillside cutting and scarring.*

COS Goal 1.7 The preservation of all floodplains and water courses within the community.

- *COS Policy 1.7.1 Prohibit clear cutting of vegetation in floodplains.*

Fallbrook Community Plan

The Fallbrook Community Plan is included in the County of San Diego General Plan (County of San Diego 2015b). The Fallbrook Community Plan COS contains the following policies intended to preserve open spaces to conserve environmental resources, providing areas for open space type recreation, limiting development in areas with safety hazards and in areas inappropriate for urbanization, or providing buffers for urban development:

Goal COS 1.2 Preservation of permanent open space areas unsuitable for intense development.

- *Policy COS 1.2.1 Encourage floodplains and natural stream courses to be preserved in permanent open space and uses limited to recreational or light agriculture uses.*
- *Policy COS 1.2.2 Restrict the construction of concrete lined flood control channels to only where such channels are necessary because of existing improvements that block flood flow and make the channelization mandatory.*

Goal COS 1.3 Water Resources. *To preserve viable streams, wetlands, and floodplains and support the natural environment for the citizens of Fallbrook.*

- *Policy COS 1.3.1 Preserve native vegetation along streams, in wetlands and floodplains.*
- *Policy COS 1.3.2 Support the enhancement (restoration, invasive species removal, etc.) of natural drainage systems and natural hydrologic regimes of watercourses.*

Bonsall Community Plan

The Bonsall Community Plan is included in the County of San Diego General Plan (County of San Diego 2011a). The Bonsall Community Plan COS contains the following goals and policies regarding resource conservation and management, including preservation of natural resources and habitat that are relevant to the proposed project:

Goal COS-1.1 the preservation of the unique natural and cultural resources of Bonsall and the San Luis Rey River and associated watershed, with continued support for its traditional rural and agricultural lifestyle.

- *Policy COS-1.1.5 Require that landscaping be designed to prevent erosion on graded sites and, if adjacent to sensitive habitats, require re-vegetation with the appropriate drought tolerant plant species with specific restrictions on the use of any invasive species.*
- *Policy COS-1.1.6 Encourage development to plant an appropriate variety of trees to stabilize soil conditions and contribute to atmospheric oxygen production.*

Goal COS-1.3 Naturally vegetated open space corridors of sufficient size to maintain biological diversity and functional access for wildlife between varying habitats and to prevent fragmentation of habitats and the creation of biological "islands".

- *Policy COS-1.3.1 Encourage the protection of all sensitive lands and habitat as identified by federal, State, and County guidelines such as oak and willow riparian, coastal, and Diegan sage scrub, native grasslands and wetlands.*
- *Policy COS-1.3.2 Support the creation of "mitigation banks" within the Bonsall CPA for development projects, and encourage mitigation be located in Bonsall, when it is required.*

Goal COS-1.5 Floodplains and watercourses preserved in their natural state that provide protection from loss of life and property through development regulations in floodplains and other wetland areas.

- *Policy COS-1.5.1 – Require adequate setbacks from all watercourses and drainages to protect property, improve water quality, provide buffer for riparian habitat and wildlife, and enhance aesthetic quality of the riparian environment.*

North County Metropolitan Community Plan

The Northern County Metropolitan Plan does not identify additional goals or policies relevant to hydrology, water resources, or water quality regulatory concerns (County of San Diego 2011b).

I-15 Corridor Subregional Plan

The I-15 Corridor Subregional Plan is included in the County of San Diego General Plan, and is intended to promote orderly development, protect environmental and man-made resources and implement the County's objectives for growth management and the structure of government for the subregion (County of San Diego 2015). The following Conservation and Scenic Preservations Goals and Policies of the Interstate (I-) 15 Corridor Subregional Plan are relevant to the proposed project:

Conservation Goal: Protect the environmental resources along the I-15 Corridor including but not limited to those contained within the "Resource Conservation Areas"[1]

Conservation Policies:

1. *Keep the watercourse of the San Luis Rey River natural and place as much as possible of the floodplain in open space easements.*
2. *Require a river plan of all development proposals within or adjacent to the San Luis Rey River floodplain, addressing the preservation of natural resources and measures to protect against potential hazards.*
3. *Identify all environmental resources threatened by development and prepare measures to mitigate or alternatives to avoid such adverse impacts.*

[1] Resource Conservation Areas are areas that possess a significant natural resource that requires specific conservation consideration within subregional plan areas. Resource Conservation Areas include, but are not limited to, groundwater problem areas, coastal wetlands, and native wildlife habitats. *Within Resource Conservation Areas, County departments and other public agencies shall give careful consideration and special environmental analysis to all projects which they intend to carry out, propose, or approve, and shall select those conservation actions most appropriate to the project and consistent with the intent of this overlay designation.*

The Scenic Preservation Policy establishes Scenic Preservation Guidelines for all development activity within the I-15 Corridor. The following Site Planning Standards from the Scenic Preservation Guidelines are relevant to the proposed project.

A. Site Planning Standards

1. Individual projects shall reinforce the character of the sites, the attributes of adjacent projects, and preserve the viewsheds, natural topographic features, and natural watercourses.

F. Development Standards for Steep Topography and Natural Features.

7. Natural watercourses shall be protected and existing watershed and groundwater resources shall be conserved.

County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance

On May 8, 2013, the San Diego RWQCB adopted a new Municipal Stormwater Permit (NPDES Permit, No. R9-2013-0001) that covered the San Diego County Co-permittees. Order No. R9-2015-0001 was adopted on February 11, 2015, amending the Regional MS4 Permit to extend coverage to the Orange County Co-permittees. Order No. R9-2015-0100 was adopted on November 18, 2015, amending the Regional MS4 Permit to extend coverage to the Riverside County Co-permittees and make minor revisions. This permit mandates that the County of San Diego develop new and updated Runoff Management Plans and Programs, including Water Quality Improvement Plans and a Jurisdictional Runoff Management Program. These documents were submitted to the San Diego RWQCB on June 26, 2015. Permit requirements are generally implemented in the unincorporated County under authority of the WPO.

The amended MS4 Permit, like all previous iterations, requires the county to establish and maintain adequate legal authority to implement all updated MS4 Permit provisions. The WPO has been amended to ensure that it is current with the minimum requirements of the recently amended MS4 Permit. The amendments include updating terminology and definitions related to land development priority development projects, removal of outdated sections, minor updates to discharge prohibitions, and the incorporation of an optional program to allow development projects to satisfy some of its storm water compliance obligations at offsite locations.

On January 27, 2016, the County Board of Supervisors adopted the WPO. The WPO became effective February 26, 2016.

County of San Diego Grading Ordinance

Except as exempted by Section 87.202, grading is not allowed within San Diego County unless a valid, unexpired grading permit is issued by the County Official authorizing such grading or the grading is part of a surface mining operation authorized by Chapter 7, Title 8, Division 7. A separate grading permit is required for each site.

The following are exempt from the requirements to obtain a grading permit provided they do not occur in or affect a watercourse or are within one of the exemptions under Chapter 2, Title 8, Division 7 Section 87.604:

- *An excavation or fill which:*
    - *is less than eight feet in vertical height (measured from the toe of the slope to the top of the slope); and*

- *does not result in the movement of more than 200 cubic yards of material on any one site.*

- *An excavation below finished grade for basements and footings of a building, retaining wall, swimming pool, septic tank, leaching system, or other structure authorized by a valid building permit. This paragraph shall not exempt from the permit requirements any fill made with the material from such excavation having an unsupported height greater than eight feet after the completion of such structure.*

- *Refuse disposal areas or sanitary fills operated and conducted in accordance with a use permit issued pursuant to the Zoning Ordinance or a permit issued pursuant to Article 2, Chapter 5, Division 8, Title 6, of this Code or as a lawful non-conforming use and where the operation and conduct thereof does not block or divert any natural drainage way or affect the lateral support of, or unduly increase the stresses in or pressures upon, any adjacent or contiguous property.*

- *Tilling or cultivating land exclusively for agricultural production, subject to the following:*
  - *The following limitations must be met:*
    - *no soils shall be exported from the area tilled or cultivated;*
    - *the tilling or cultivating will not block or divert any natural drainage way;*
    - *the tilling or cultivating will not affect the lateral support or unduly increase the stresses in or pressures upon any adjacent or contiguous property; and*
    - *the land to be tilled or cultivated has been in agricultural production for at least one of the preceding five years.*
  - *This exemption does not allow:*
    - *the establishment of new agricultural operations on, or the expansion of existing agricultural operations onto, any area which has not been in agricultural production for at least one of the preceding five years;*
    - *conversion of agricultural land to nonagricultural use or activities that reduce habitat and wildlife to facilitate conversion to non-agricultural use;*
    - *conversion of land previously used solely for grazing or beekeeping, to other types of agricultural operations which involve a greater intensity of land disturbance, such as planted crops. Planting crops on land previously used for grazing is a prohibited conversion, unless the grazing conducted for the period specified in paragraph (1)(dd) above included such crop planting.*

- *Grading incidental to the construction or installation of facilities by a public agency or utility not subject to regulation by this Division.*

- *Grading to the limited extent authorized in advance in writing by the County Official to perform repairs so as to prevent immediately threatened injury to persons or property which has arisen as a result of an emergency. The County Official may require that a grading permit subsequently be obtained to reflect the work performed, and may require the submittal of information, documentation, reports and other matter as required by the applicable provisions of this Division for such permit.*

- *Grading or reclamation work pursuant to a use permit or reclamation plan approved pursuant to Chapter 7 of this Division for a borrow pit, quarry or other surface mining operation, unless the operation is not required to obtain a reclamation plan because it will complete the removal of material to be used exclusively for fill at another approved site or sites within one year.*

Operations required to secure a grading permit must do so for the excavation site as well as the fill sites.

- *Routine road maintenance activities, such as smoothing, texturing, and filling of small rills and potholes, provided they do not involve land form changes and are conducted entirely within the existing disturbed footprint of an existing road.*
- *Temporary stockpiling of earth authorized by a valid and unexpired permit issued pursuant to Section 87.218 of this Chapter.*

City of Escondido General Plan

The purpose of the City of Escondido General Plan's Resource Conservation Element is to identify biologically important open space areas and establish policies for developing a comprehensive system that includes natural areas in concert with the Natural Communities Conservation Plan (City of Escondido 2012). A related purpose is to establish policies or conserve other important resources, including area and water quality, cultural, agricultural, and mineral and energy resources.

Water Resources Goals. Escondido's planning area is located within three watershed areas: Escondido Creek, the San Dieguito River, and San Luis Rey Creek. Escondido manages two fresh water lakes (Dixon and Wohlford) that provide approximately 15 percent of the city's supply and constitute the city's primary storage facilities for local potable water. A reliable clean water supply is essential for public health, environmental sustainability, and economic prosperity. The City of Escondido General Plan includes the following goals for the preservation and protection of the city's water resources:

- *1.0 Surface and Groundwater Quality. An important strategy in protecting the city's surface and groundwater quality against erosion and pollutants includes incorporating Low Impact Development (LID) design principles and prohibiting construction in and near natural drainages and waterways including the filling of tributaries, dry washes, and arroyos (Figures VII-8 and VII-9). Promoting sustainable development that does not encroach on important native landscapes while also dedicating land for adequate buffers will aid in species" survival and ensure the quality of Escondido's water resources are maintained. Also refer to Stormwater Management in the Mobility and Infrastructure Element, and Floods in the Community Protection Element.*
- *2.0 Urban Runoff. Urbanization increases the variety and amount of pollutants that threaten clean water supplies. Sediment from development and new construction such as oils and toxic chemicals from automobiles, nutrients and pesticides from landscaping, and viruses and bacteria from failing septic systems are examples of pollutants generated in urban areas. These pollutants can have a negative effect on drinking water supplies, recreation, and wildlife. The National Pollutant Discharge Elimination System (NPDES) permit for areas within Escondido's watershed areas requires that all runoff be tested and treated so that pollutant levels are minimized to the maximum extent possible.*

City of Poway General Plan

The City of Poway General Plan Natural Resources Element contains the following policies regarding natural water systems, such as surface waters and groundwater, that are relevant to the proposed project (City of Poway 1991):

Goal IV, Policy B Surface Waters. The natural character of creeks and channels should be maintained or restored to the greatest extent possible with consideration for maintaining adequate flood protection. Development will comply with all State regulations relative to water quality protection to the maximum extent practicable.

- *Strategy 5. Natural locations and rates of discharge into creeks and channels should not be increased without sufficient mitigation to ensure that significant alteration of the natural system will not occur.*
- *Strategy 16. Grading should not increase the natural rate of erosion or cause siltation of stream channels.*

City of Poway Municipal Code

The following ordinances from the City of Poway Municipal Code are relevant to the proposed project:

- *Stormwater Management and Discharge Control Ordinance (Chapter 13.09). This ordinance addresses urban runoff. It contains discharge prohibitions, exemptions to discharge prohibitions, BMP requirements, maintenance of BMPs, and inspection and sampling. The ordinance also defines penalties. This ordinance is regulatory and applies to all development projects.*
- *Excavation and Grading Ordinance (Chapter 16.40). Includes provisions to establish a set of standards regulating design and construction of building sites by grading; protect adjacent properties from damage caused by blockage, diversion, or channeling of natural runoff waters; and provide for erosion control and proper drainage. Grading permit requirements and exceptions are defined in Chapter 16.42.010.*
- *Standard Urban Stormwater Mitigation Plan Ordinance (Chapter 16.100). Objectives include ensuring that dischargers do not cause or contribute to a violation of water quality standards; prohibiting non-stormwater discharges in urban runoff; and reducing the discharge of pollutants from urban runoff conveyance systems to the maximum extent practicable. The regulations apply to the development plan approval process for discretionary development applications. The regulation provides methods for BMP selection and specifies standards for new developments including compliance with the City of Poway local SUSMP.*

City of Poway Jurisdictional Urban Runoff Management Program

In 2002, the City of Poway adopted a Jurisdictional Urban Runoff Management Program (JURMP) as required by San Diego RWQCB Order No. 2001-01. The purpose of the JURMP is to present a strategy to reduce the discharge of pollutants from the MS4 to the maximum extent practicable. This involves improving existing programs and developing new programs intended to minimize or eliminate the effects of urban runoff from the city on receiving waterbodies. The goal is to improve the quality of the discharge from the MS4, which will have beneficial effects on the local receiving waterbodies. The JURMP includes management measures for a variety of different sectors and activity types, such as municipal, industrial, commercial, construction, and significant development and re-development activities.

City of San Diego General Plan

The Conservation Element (CE) of the City of San Diego General Plan contains policies for sustainable development, preservation of open space and wildlife, management of resources, and other initiatives to protect public health and welfare (City of San Diego 2015). Water resource management goals for the City of San Diego include effective long-term management of water resources so that demand is in balance with efficient, sustainable supplies, and providing for a safe and adequate water supply that effectively meets the demand for the existing and future population through water efficiency and reclamation programs. The General Plan also sets a goal to protect and restore wetland resources, including all existing wetland habitat through a “no net loss” approach.

The following CE policies relate to preservation and management of water resources within the city of San Diego:

- *CE-B.4 – Limit and control runoff, sedimentation, and erosion both during and after construction activity.*
- *CE-D.2 – Protect drinking water resources by implementing guidelines for future development that may affect water supply watersheds, reservoirs and groundwater aquifers. The guidelines should address site design, BMPs and storm water treatment measures.*
- *CE-E.2 Apply water quality protection measures to land development projects early in the process-during project design, permitting, construction, and operations-in order to minimize the quantity of runoff generated on-site, the disruption of natural water flows and the contamination of storm water runoff.*
- *CE-E.3 – Require contractors to comply with accepted storm water pollution prevention planning practices for all projects.*
- *CE-E.4 – Continue to participate in the development and implementation of Watershed Management Plans for water quality and habitat protection*
- *CE-E.5 – Assure that City departments continue to use "Best Practice" procedures so that water quality objectives are routinely implemented.*
- *CE-E.6 – Continue to encourage "Pollution Control" measures to promote the proper collection and disposal of pollutants at the source, rather than allowing them to enter the storm drain system.*
- *CE-E.7 – Manage Floodplains to address their multi-purpose use, including natural drainage, habitat preservation, and open space and passive recreation while also promoting public health and safety.CE-H.8 – Implement a "no net loss" approach to wetlands conservation in accordance with all city, state, and federal regulations.*

City of San Diego Land Development Manual

Appendix O of the Land Development Manual contains the Storm Water Standards Manual, which defines specific requirements for water quality treatment consistent with the Model Standard Urban Storm Water Mitigation Plan (City of San Diego 2018). The storm water standards provide information to applicants and are processed through the City's Development Services Department. Section IV of the Land Development Manual: Revegetation and Erosion Control Guidelines defines specific procedures for slope stabilization and revegetation. It provides guidance on the selection, design, and incorporation of BMPs into project design.

3.9.3 Draft Significance Criteria

Had an impact analysis been completed for the proposed project, significance criteria would likely have been based on the checklist items in Appendix G of the CEQA Guidelines. An might have been considered significant if the project would:

a) Violate any water quality standards or waste discharge requirements;

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

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

e) Create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or

j) Cause inundation by seiche, tsunami, or mudflow.

3.9.4 Draft Analytical Figures

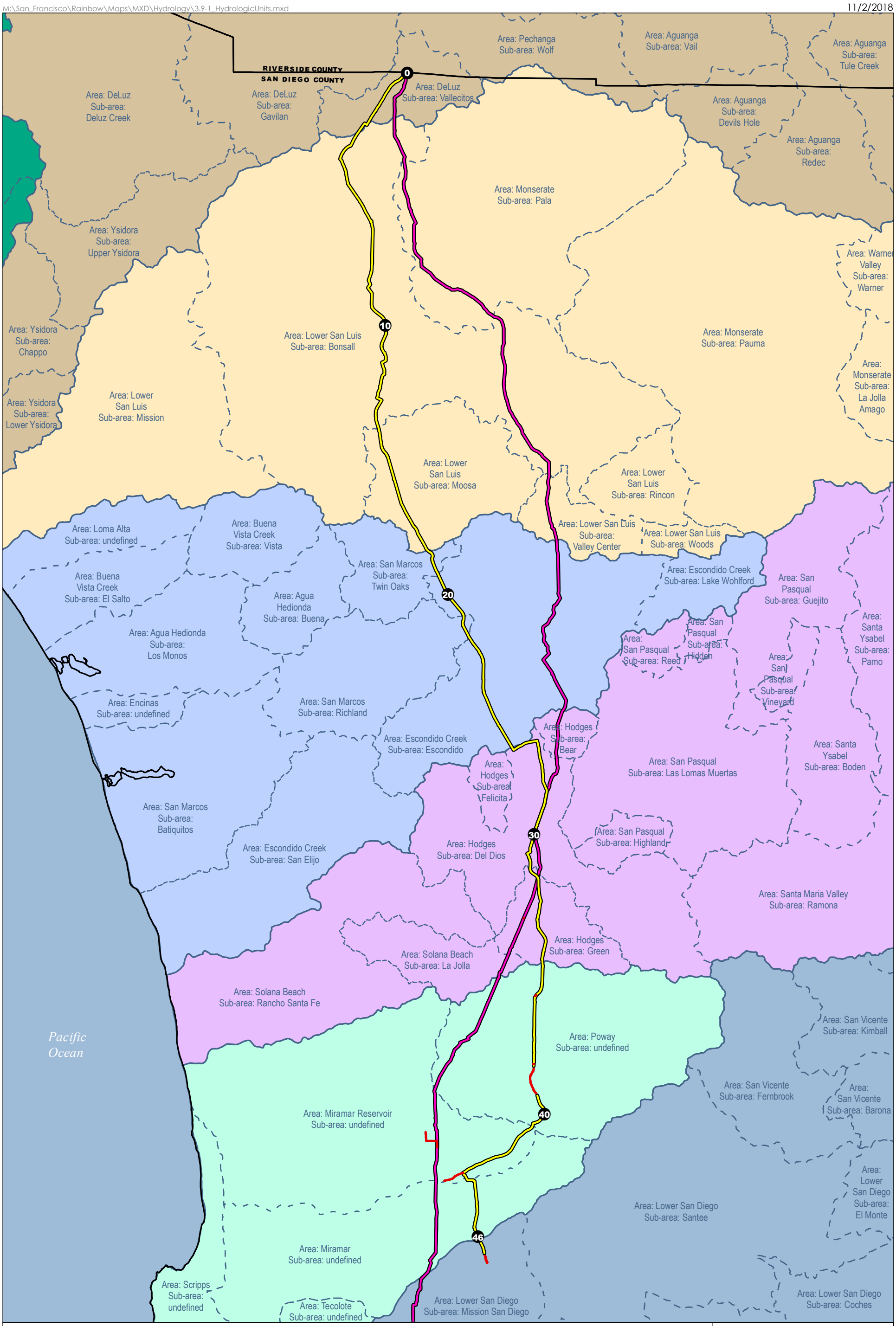


Figure 3.9-1
Hydrologic Units in the Region of the Proposed Project
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012; SanGIS 2004; SDG&E 2017; USMC 2017

Figure 3.9-2
Groundwater Basins in the Region of the Proposed Project
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: CDWR 2016; ESRI 2012; SDG&E 2017; USMC 2017

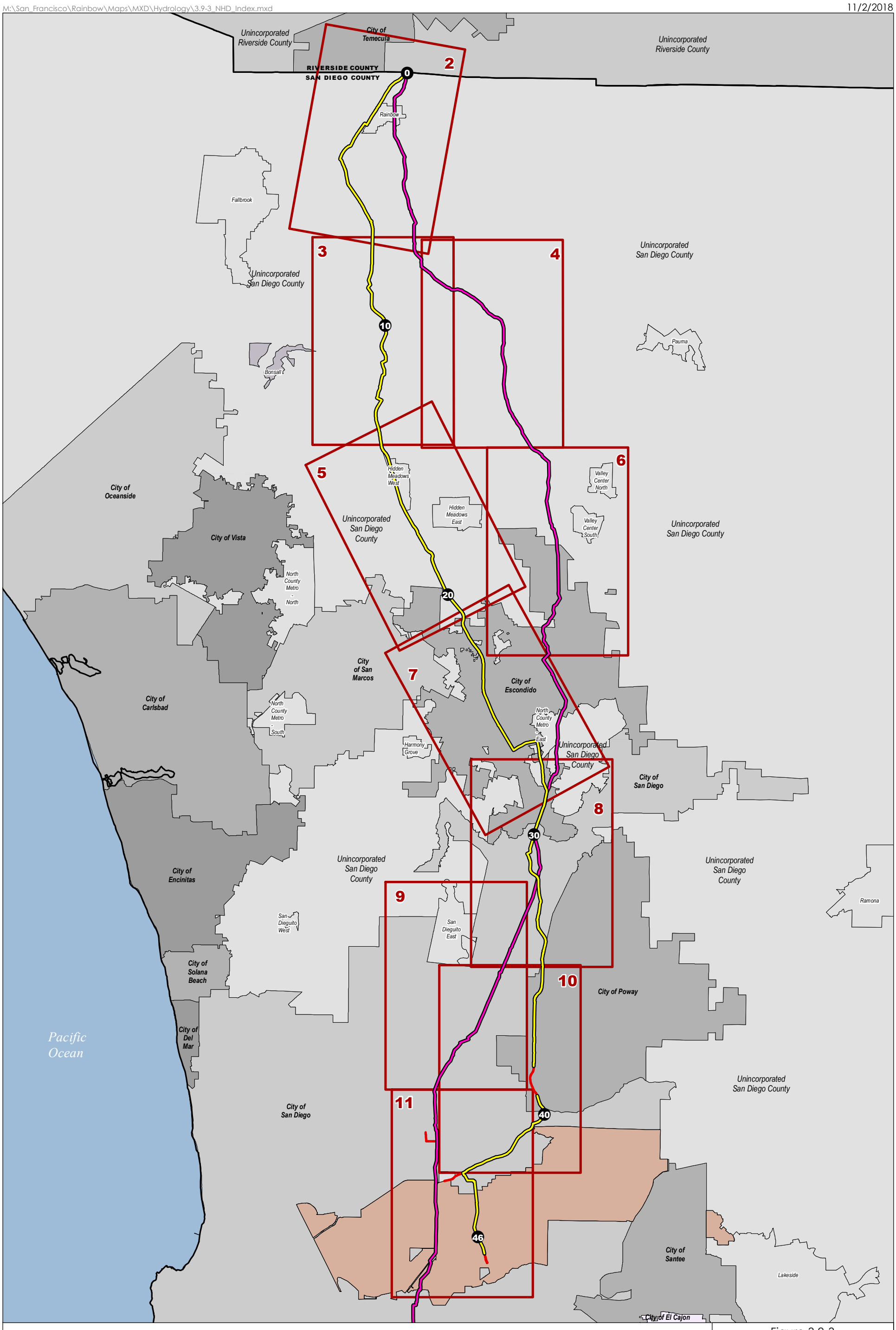
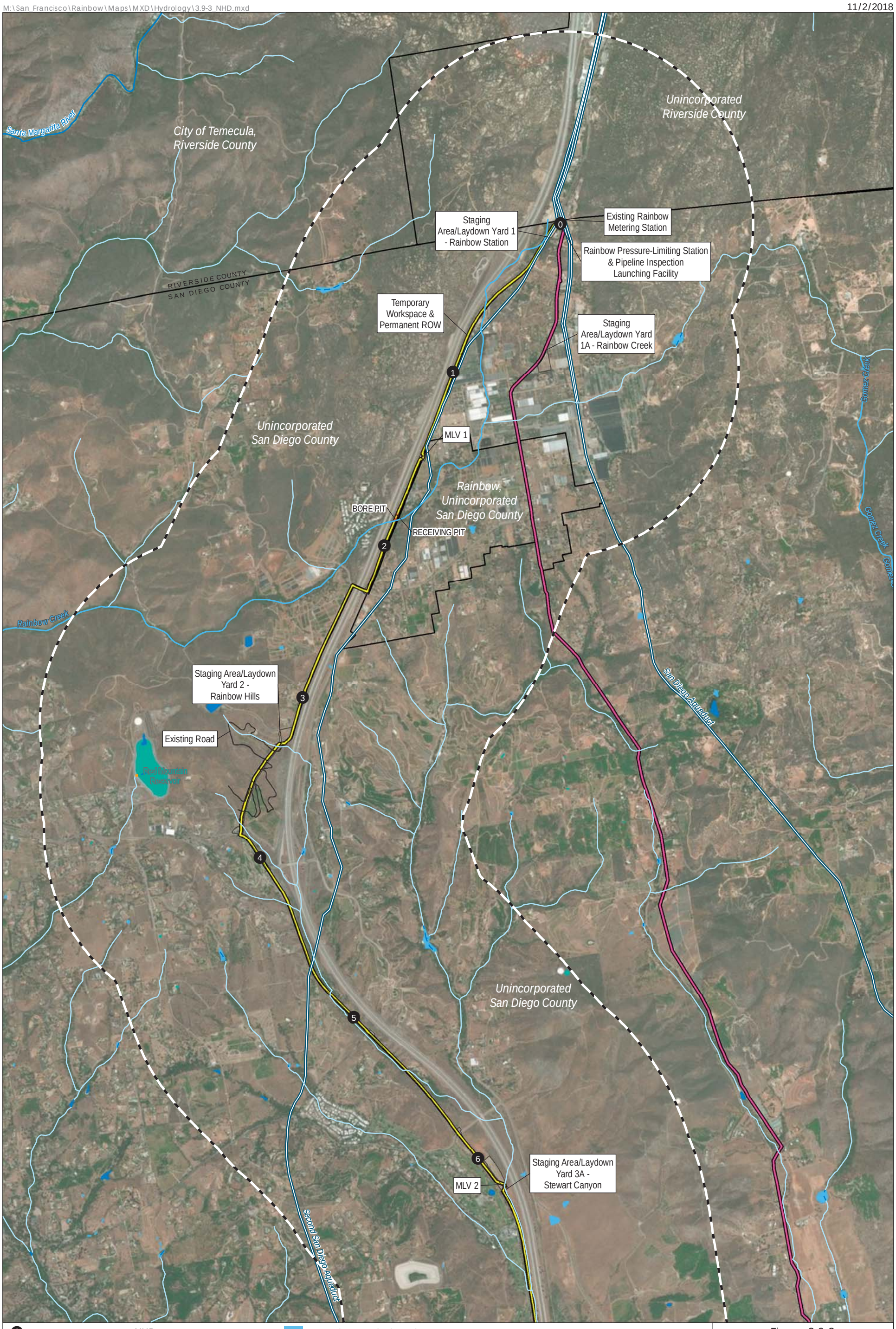


Figure 3.9-3
Surface Waterbodies in the Study Area
Page 1 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012; SanGIS 2016; SDG&E 2017; USMC 2017



1 Milepost
Line 3602
Existing Line 1600
Bore Pits
Workspaces
Municipal Boundary
1-Mile Buffer

NHD
Artificial Path
Connector
Ephemeral Stream/River
Intermittent Stream/River
Perennial Stream/River
Pipeline: Water

Intermittent Lake/Pond
Perennial Lake/Pond
Reservoir

Key:
ROW Right-Of-Way

0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 2 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

1 Milepost
Line 3602
Existing Line 1600
Bore Pits
Workspaces
Municipal Boundary
1-Mile Buffer

NHD
Artificial Path
Connector
Ephemeral Stream/River
Intermittent Stream/River
Pipeline: Water
Lake/Pond
Intermittent Lake/Pond
Perennial Lake/Pond
Reservoir
Swamp/Marsh

Key:
ROW Right-Of-Way

0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 3 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 4 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

1 Milepost
Line 3602
Workspaces
Municipal Boundary
1-Mile Buffer
NHD
Artificial Path
Canal/Ditch
Connector
Ephemeral Stream/River
Pipeline: Water
Lake/Pond
Intermittent Lake/Pond
Perennial Lake/Pond
Reservoir

Key:
ROW Right-Of-Way

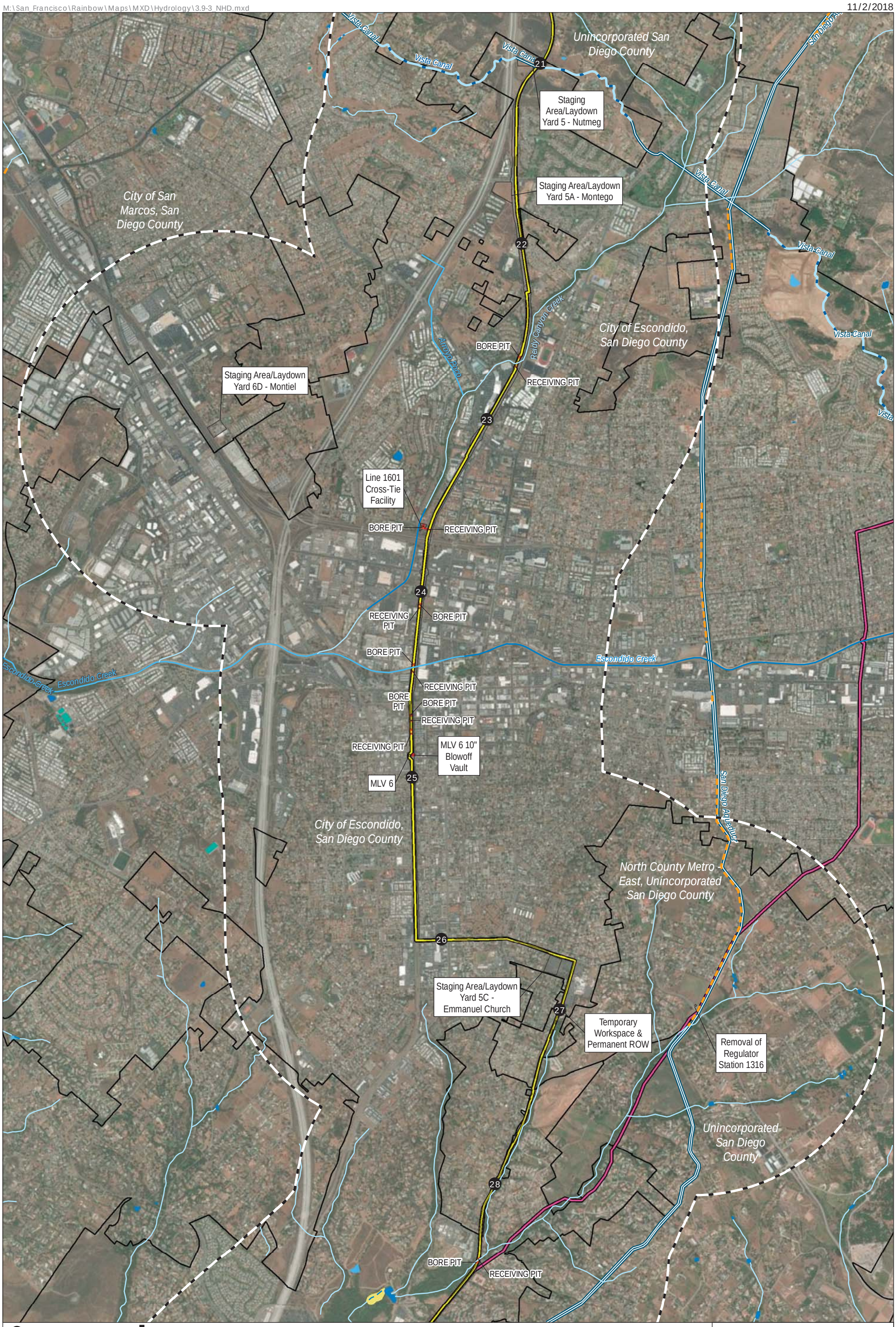
0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 5 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 6 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017



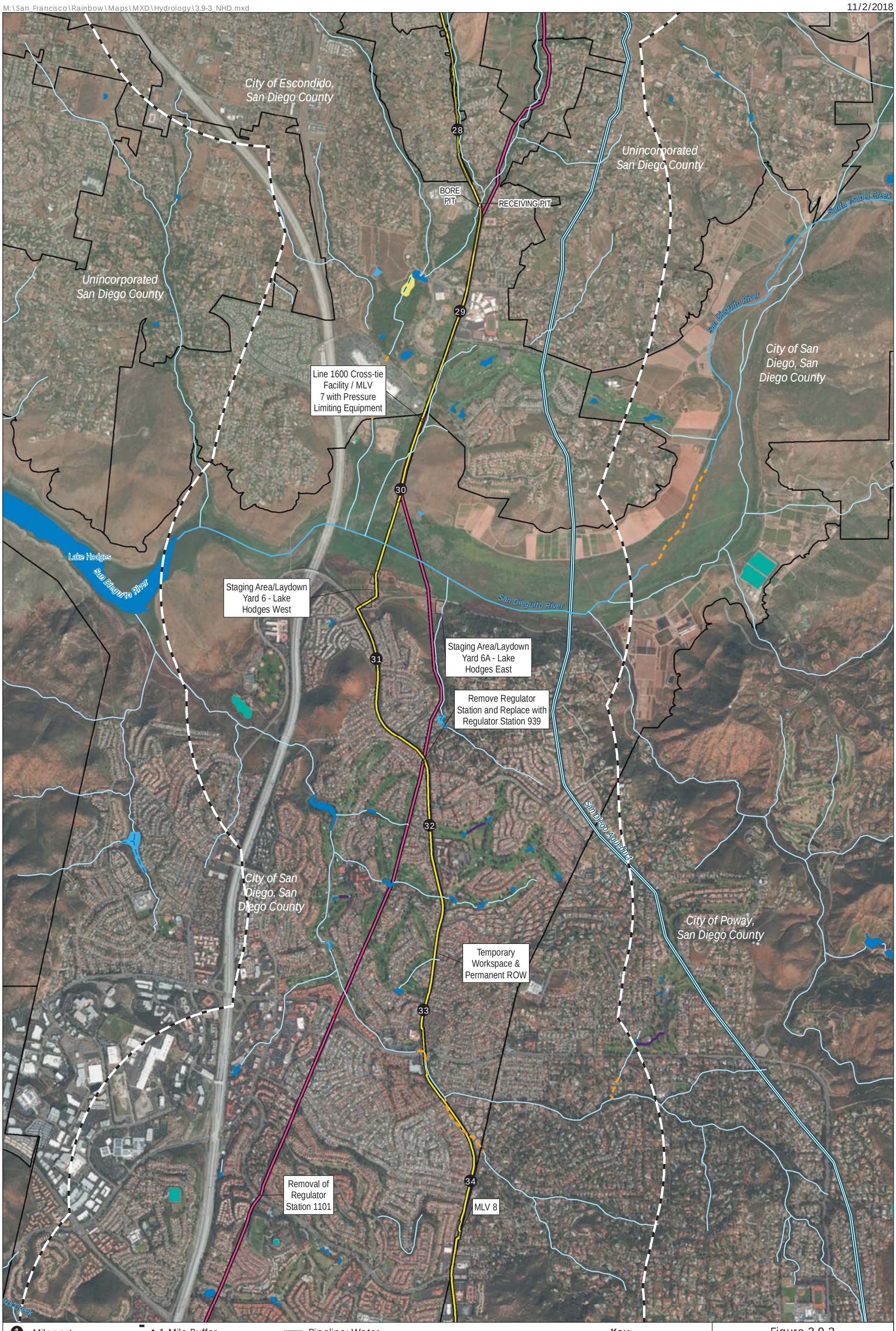
1 Milepost
Line 3602
Tie-Ins & Extensions
Existing Line 1600
Bore Pits
Workspaces
Municipal Boundary
1-Mile Buffer
NHD
Artificial Path
Canal/Ditch
Connector
Ephemeral Stream/River
Intermittent Stream/River
Perennial Stream/River
Pipeline: Water
Intermittent Lake/Pond
Perennial Lake/Pond
Reservoir
Swamp/Marsh

Key:
MLV Mainline Valve
ROW Right-Of-Way

0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 7 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017



- Milepost
- Line 3602
- Tie-Ins & Extensions
- Existing Line 1600
- Bore Pits
- Workspaces
- Municipal Boundary
- 1-Mile Buffer

NHD

- Artificial Path
- Connector
- Stream/River
- Ephemeral Stream/River
- Intermittent Stream/River
- Pipeline: Water
- Lake/Pond
- Intermittent Lake/Pond
- Perennial Lake/Pond
- Reservoir
- Swamp/Marsh

Key:
ROW Right-Of-Way

0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 8 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

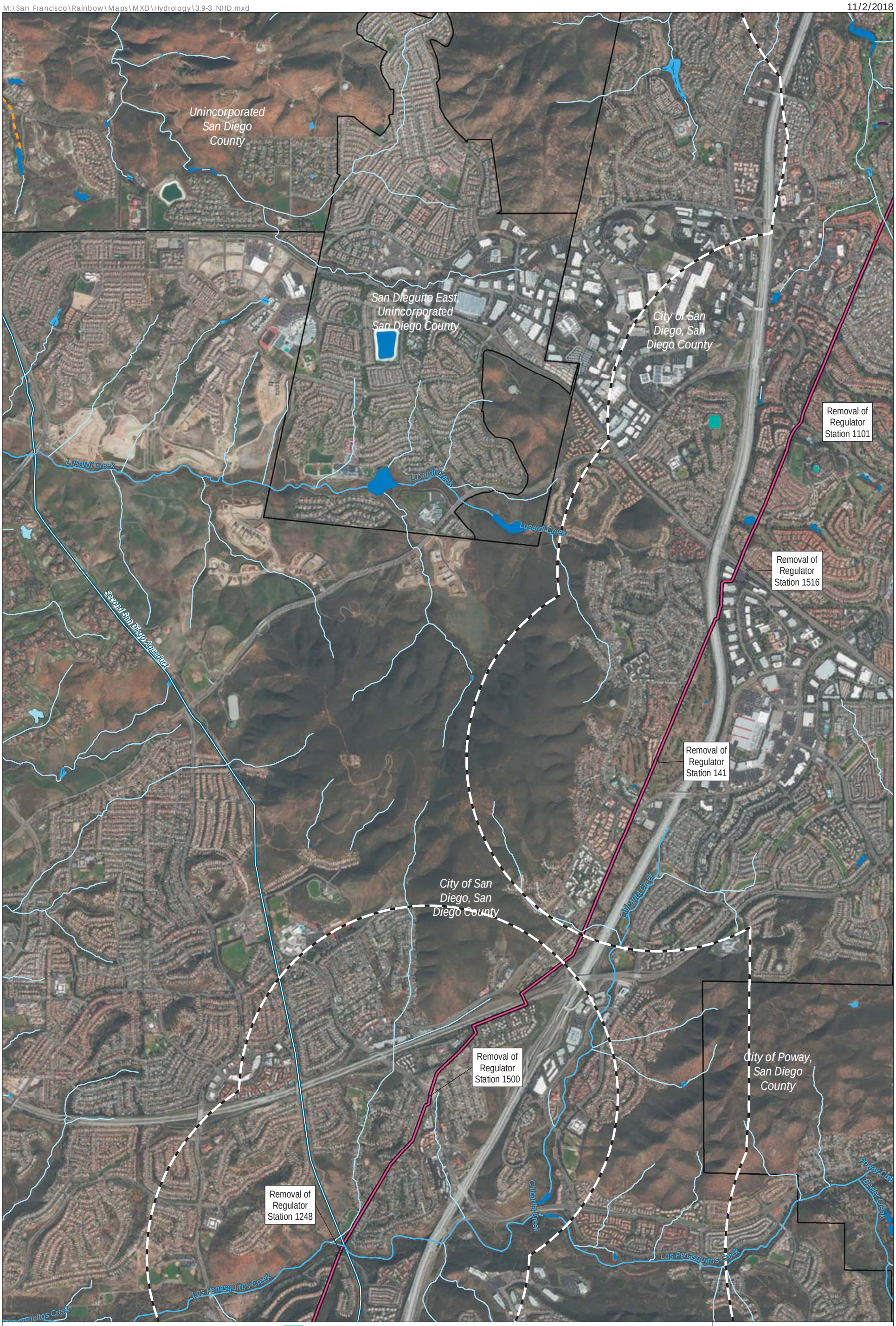
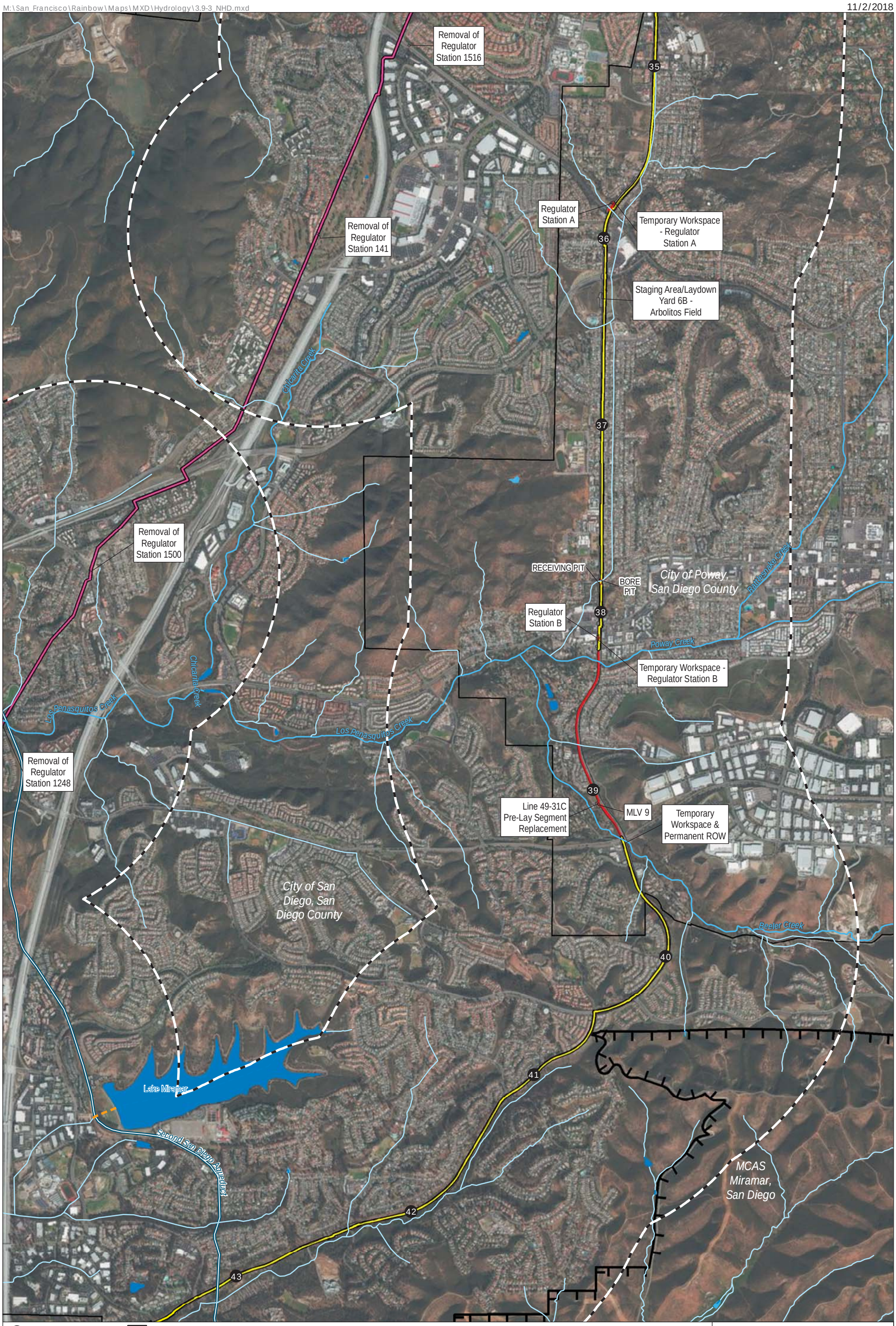


Figure 3.9-3
Surface Waterbodies in the Study Area
Page 9 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017



Milepost
Line 3602
Tie-Ins & Extensions
Existing Line 1600
Bore Pits
Workspaces
MCAS Miramar

Municipal Boundary
1-Mile Buffer
NHD
Artificial Path
Connector
Ephemeral Stream/River
Intermittent Stream/River

Pipeline: Water
Lake/Pond
Intermittent Lake/Pond
Perennial Lake/Pond
Reservoir

Key:
ROW Right-Of-Way

0 0.25 0.5
Miles

Figure 3.9-3
Surface Waterbodies in the Study Area
Page 10 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

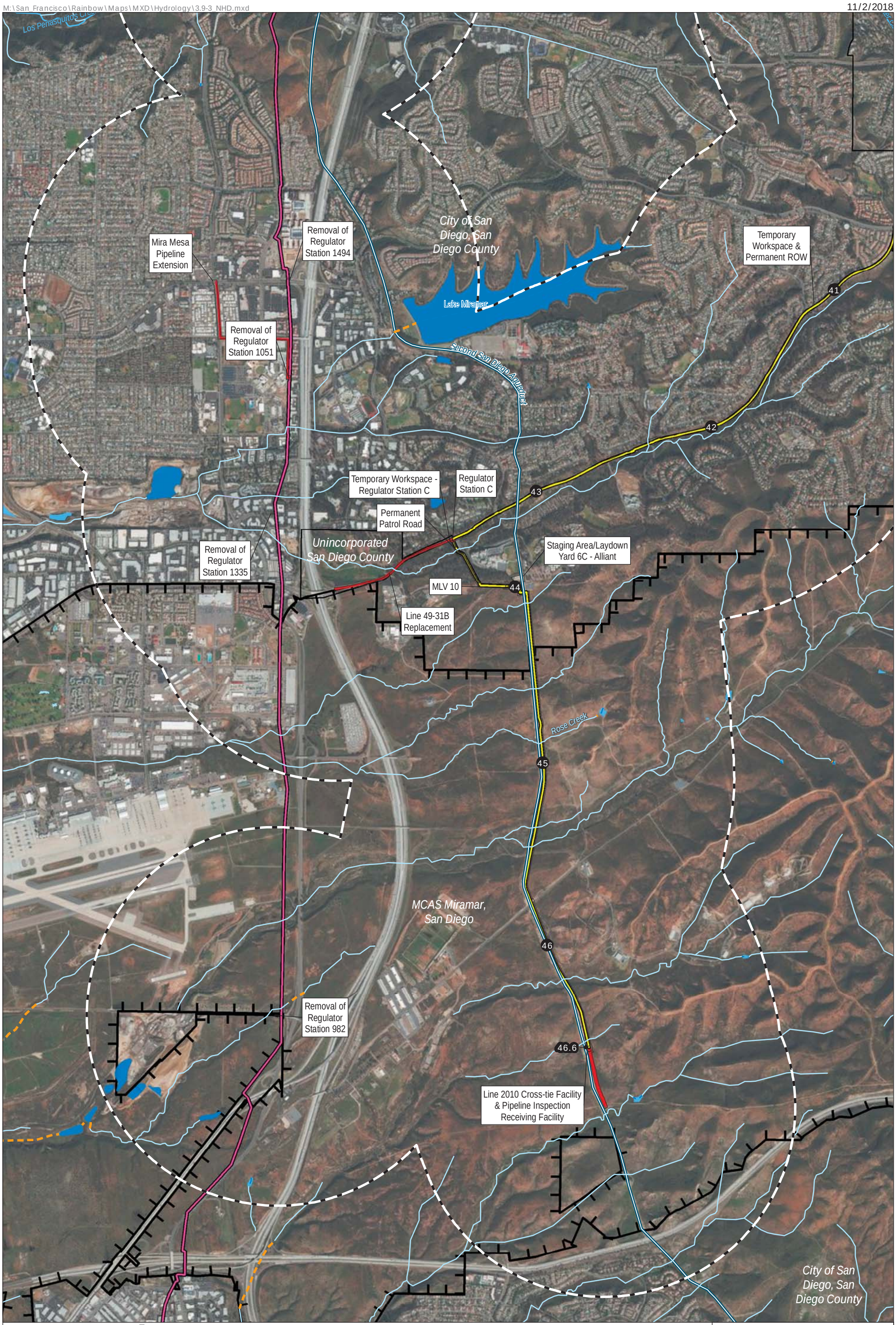


Figure 3.9-3
Surface Waterbodies in the Study Area
Page 11 of 11
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012, 2018; SanGIS 2016; SDG&E 2017; USMC 2017; USGS 2017

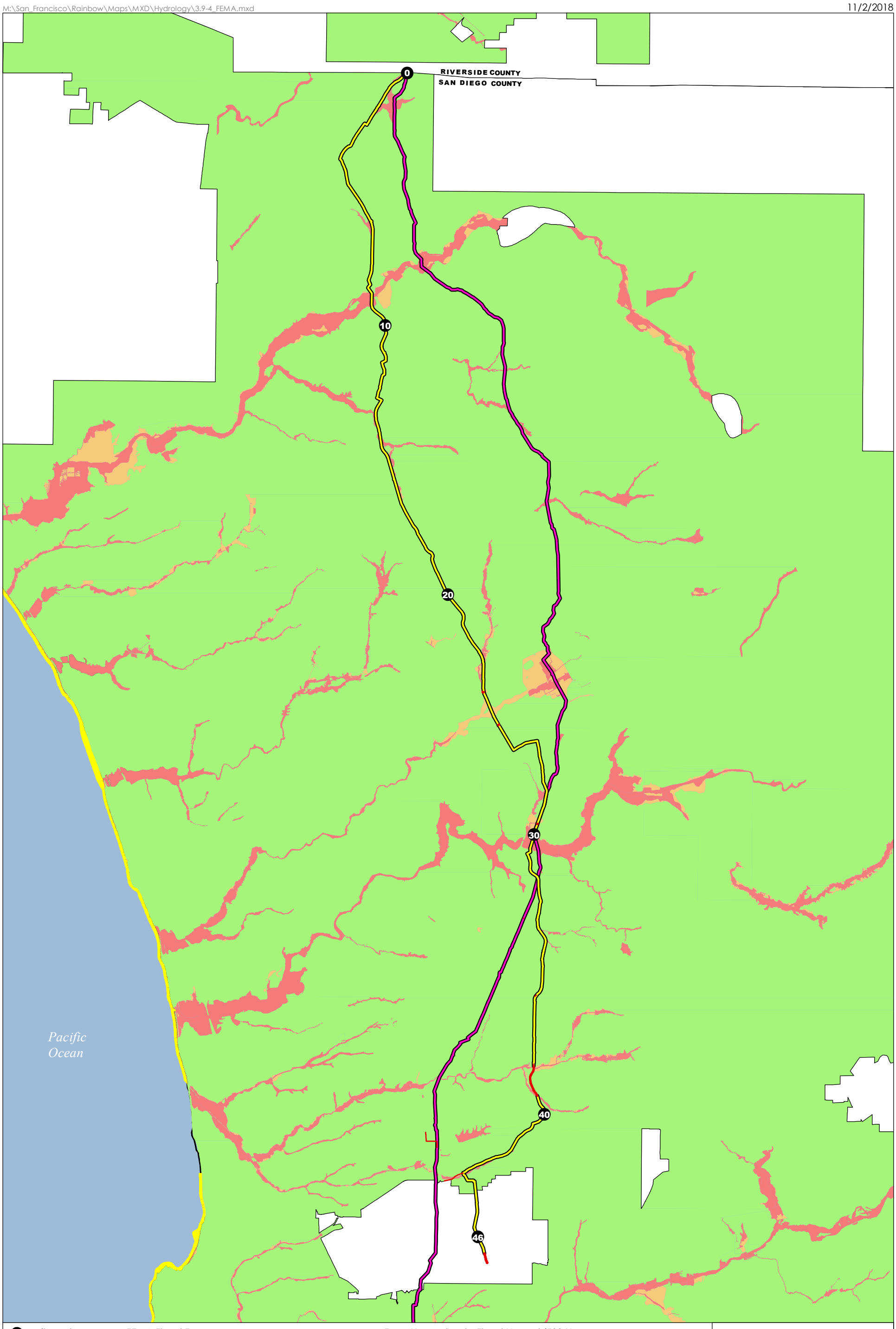


Figure 3.9-4
FEMA Flood Zones in the Region of the Proposed Project
Pipeline Safety and Reliability Project - New Natural Gas Line 3602 and De-rating Line 1600
San Diego County, CA

Sources: ESRI 2012; FEMA 2017; SDG&E 2017; USMC 2017

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