FINAL APPLICATION FOR LICENSE
OF MAJOR UNCONSTRUCTED PROJECT

UPDATE TO
ENVIRONMENTAL DESCRIPTION
Hydrology and Water quality

LAKE ELSINORE
ADVANCED PUMPED STORAGE PROJECT
FEDERAL ENERGY REGULATORY COMMISSION
PROJECT NUMBER 14227

Applicant:

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September 2015

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1.0 Hydrology and Water Quality

1.1 Introduction

The Project area contains several distinct regional topographic features, including the eastern slopes of the Santa Ana and Elsinore Mountains, the Perris Uplands, and the Elsinore-Temecula Trough. The Project area contain gently rolling hills at the lower elevations and steeper slopes at upper elevations, ranging in elevation from 1200 to 3400-feet above msl. The proposed Lake-Case Springs transmission alignment cross the northeast-facing slopes of the Santa Ana Mountains. The proposed Santa Rosa Substation, LEAPS Powerhouse, and most of the Northern (Lake-Santa Rosa) transmission line occurs within the Elsinore-Temecula Trough, which runs along the northeast toe of the Santa Ana Mountains. Portions of the transmission lines also occur within the Perris upland area.

Climate in the Lake Elsinore area is semi-arid, with warm, dry summers and mild winters. Summer temperatures can exceed 100 degrees Fahrenheit but nights are generally cool. Annual precipitation averages 8-12 inches and annual evapotranspiration (ET) averages about 55 inches. A summary of monthly temperature and precipitation for the Lake Elsinore area, based on data spanning 57 years (1948-2005), is shown in Table 1–1 (City of Lake Elsinore Climate Summary – Temperature and Precipitation).

Table 1-1: City of Lake Elsinore Climate Summary Temperatures and Precipitation

Month	Temperature (°F)			Precipitation (inches)		
	Mean	Avg Max	Avg Min	Avg	Max	Min
January	51.0	65.3	36.8	2.68	13.94	0.00
February	53.4	67.7	39.0	2.46	11.94	0.00
March	56.3	71/1	41.5	1.79	0.83	0.00
April	60.7	76.4	44.8	0.67	4.27	0.00
May	66.2	82.0	50.3	0.18	2.02	0.00
June	72.7	90.5	54.7	0.02	0.32	0.00
July	78.9	98.0	59.7	0.07	1.67	0.00
August	79.5	98.4	60.7	0.10	3.13	0.00
September	75.2	93.6	56.9	0.24	4.26	0.00
October	66.8	83.9	49.7	0.42	7.66	0.00
November	57.3	73.1	41.6	1.07	7.33	0.00
December	51.4	66.3	36.4	1.65	8.67	0.00
Annual	64.1	80.5	47.7	11.35	23.02	2.71

Source: National Weather Service Cooperative Station 42805 – Elsinore, 1948-2005

1.2 Surface Water

The proposed Lake-Case Springs transmission alignment crosses over an estimated 60 USGS-depicted blue-line (jurisdictional) drainages. Most of these drainages are considered ephemeral. The route crosses Temescal Wash in the vicinity of the I-15 Freeway and Indian Truck Trail. This watercourse contains consistent flowing water during the winter and spring seasons. In addition, the proposed Lake-Case Springs transmission alignment crosses Los Alamos Creek, a tributary of San Mateo Creek, along its Southern (Santa Rosa-Case Springs) segment. Los Alamos Creek has consistent flowing water during the winter and spring seasons but flows are intermittent during the summer months depending on the amount of rainfall received in the area.

With respect to surface water hydrology, the environmental setting is further described below.

1.2.1 Lake Elsinore.

Lake Elsinore is a natural lake and is about 5 miles long and 2 miles wide. The primary source of water to the lake is the San Jacinto River with a drainage area of about 723 square miles, which is the largest part of the 782 square mile drainage area to Lake Elsinore. The remaining watershed consists of smaller tributaries which flow directly into Lake Elsinore and direct rainfall on the lake surface. Canyon Lake (Railroad Canyon Reservoir), which has a storage capacity of about 12,000 acre-feet (AF) and a surface area of 525 acres is located along the San Jacinto River, about 3 miles upstream from Lake Elsinore. The EVMWD operates the reservoir for water supply and storage of water purchased from the Colorado River. Spill from the Canyon Lake Dam into Temescal Creek is relatively rare due to the EVMWD's withdrawals and small inflow values. Spill events typically occur only during high runoff from winter storm events in extremely wet years (1919, 1981, 1983, 1993, and 1995). Table 1–2 (Daily Discharge Statistics for USGS Gage No. 11070500 – San Jacinto River at Elsinore, California) provides flow data for USGS Gage No. 11070500 located about 2 miles downstream from the Canyon Lake Dam. Natural inflow to Lake Elsinore average 11,380 acre-feet per year (AFY).

Table 1-2: Daily Discharge Statistics for San Jacinto River At Elsinore, California USGS Gage No. 11070500

(Water Years 1975 to 2004) (cfs)

Month	Mean	Median	Maximum	Minimum	10 Percent Exceedance	90 Percent Exceedance
Annual	23.93	0.63	8,080	0.00	4.80	0.00
October	0.44	0.36	12	0.00	0.82	0.00
November	0.69	0.65	11	0.00	1.30	0.08
December	1.14	0.94	25	0	1.80	0.36
January	41.55	1.10	4490	0.15	8.93	0.48
February	128.84	1.45	8080	0.17	91.30	0.68

Month	Mean	Median	Maximum	Minimum	10 Percent Exceedance	90 Percent Exceedance
March	93.57	1.40	5350	0.00	237.10	0.60
April	18.01	0.96	365	0.01	63.00	0.37
May	8.13	0.57	490	0.00	18.00	0.16
June	0.93	0.26	17	0.00	2.00	0.00
July	0.28	0.10	1.90	0.00	0.99	0.00
August	0.18	0.05	1.60	0.00	0.55	0.00
September	0.26	0.16	2.10	0.00	0.55	0.00
Notes: cfs – cubic feet per second						

Source: United States Geological Survey

Historically, the lake elevation was highly variable and has completely dried out including years 1850, 1880, 1954, and 1959 through 1963. As shown in Figure 1–1 (Lake Elsinore Elevations [1912-1990]), Lake Elsinore was very low or completely dry thoughout most of the 1950's and 1960's. Conversely, Lake Elsinore spills into Temescal Creek only during extremely wet years (1919, 1981, 1983, 1993, and 1995) and has caused extensive flooding in the City during such periods.

Adjacent and located to the southeast of Lake Elsinore are three other water bodies: Back Basin, Lake Alpha, and Lake Beta. Back Basin is normally dry and is separated from Lake Elsinore by a 2.5-mile-long earthen berm constructed as part of the Lake Elsinore Management Project under the auspices of the Corps, BLM, and Riverside County Flood Control District. This project was completed in the early 1990s to reduce evaporation losses from Lake Elsinore and provide additional flood storage, while improving water quality, habitat, and recreational opportunities associated with Lake Elsinore. The Back Basin berm has an overflow weir at elevation 1,262 feet msl at which point flow from Lake Elsinore enters Back Basin. Lake Alpha and Lake Beta are connected to Lake Elsinore by a 48-inch gated conduit in the levee. These two lakes form a wetland area and are effectively the low spots in the Back Basin.

An unfinished element of the Lake Elsinore Management Project was the establishment of a long-term supplemental water supply for the lake. Planners felt that recycled water would be a preferred source over using scarce potable water for lake level stabilization. As illustrated in

Figure 1–2 (Lake Elsinore Elevations [1992-2002]) the lake elevation steadily declined in recent years.[1, 2]

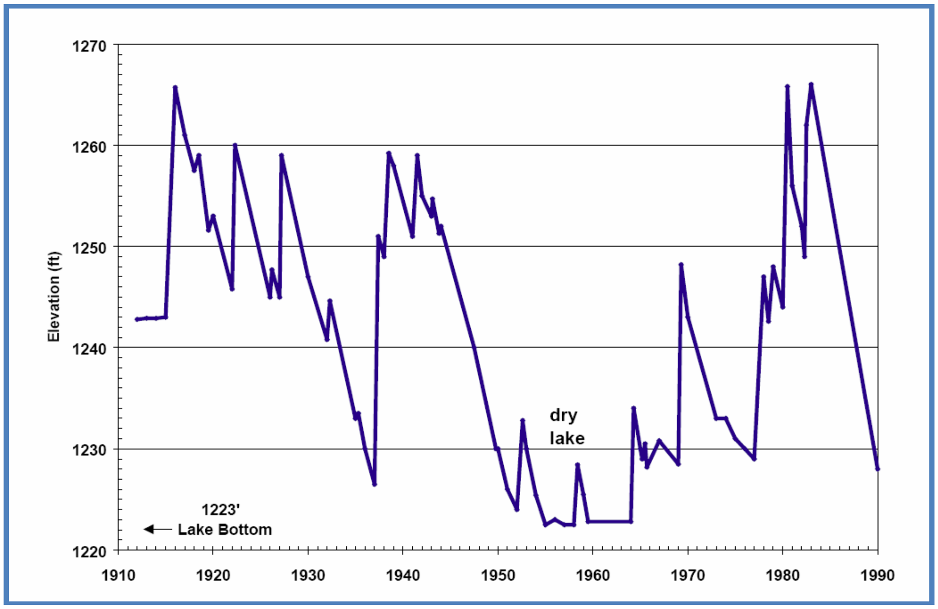

Figure 1-1: Lake Elsinore Elevations (1912-1990)

Source: California Regional Water Quality Control Board, Santa Ana Region

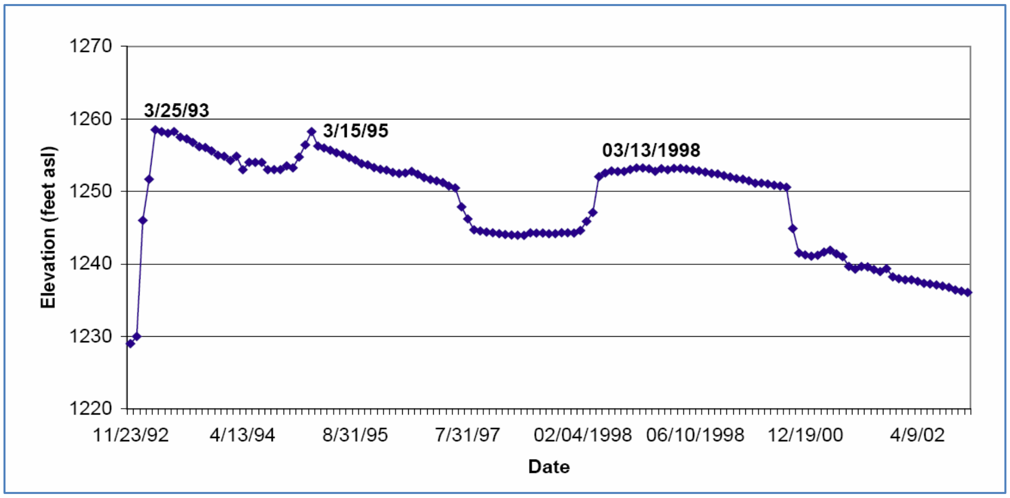

Figure 1-2: Lake Elsinore Elevations (1992-2002)

Source: California Regional Water Quality Control Board, Santa Ana Region

[1] / Op. Cit., Public Workshop: Proposed Basin Plan Amendment – Incorporation of Total Maximum Daily Loads (TMDLs) for Nutrients for Lake Elsinore and Canyon Lake, p. 7.

[2] / California Environmental Protection Agency, State Water Resource Control Board and Regional Water Quality Control Boards, undated, p. 8 (http://www.calepa.ca.gov/Publications/Reports/AP2002A/Water.pdf).

To address this issue, the EVMWD and the City of Lake Elsinore formed a Recycled Water Task Force charged with determining public opinion on the use of recycled water to supplement Lake Elsinore, identifying the desired actions and outcomes for the use of recycled water, and preparing a white paper on the topic. The task force published its findings in 1997 and concluded that recycled water may be acceptable for supplementing the water in Lake Elsinore provided that Title 22 standards for disinfected tertiary treatment approved uses are met, nutrient removal to within the lowest natural background levels can be integrated into the next treatment plant upgrade, and a lake water quality monitoring program is implemented. Subsequently, the EVMWD implemented a feasibility study in support of a NPDES permit and, along with the Eastern Municipal Water District (EMWD), began a pilot discharge project in June 2002. With permits to add 4,480 AF of recycled water and up to 5,000 AF of groundwater (from the Island Wells) each year for two years, the pilot discharge project was intended to increase and stabilize lake levels and to test the effects of recycled water discharge on water quality and beneficial uses of the lake. The pilot discharge project was extended through January 2005.

In July 2001, the Joint Watershed Authority filed a Notice of Intent to prepare a Program Environmental Impact Report for the Lake Elsinore Stabilization and Enhancement Project. The stated objectives of this project are the following: (1) stabilization of water level of Lake Elsinore, by maintaining the lake elevation within a desirable operating range (minimum of 1240-feet to a maximum of 1247-feet above msl); (2) improvement of lake water quality (i.e., reduce algae blooms, increase water clarity, increase DO concentrations throughout the water column, and reduce or eliminate fish kills); and (3) enhancement of Lake Elsinore as a regional aesthetic and recreational resource. The Joint Watershed Authority approved the Lake Elsinore Stabilization and Enhancement Project in September 2005.

The primary source for make-up water is EVMWD's Regional Reclamation Plant[3] adjacent to Lake Elsinore. EVMWD relies on Water Rights Permit No. 30520 for an exclusive right to all water discharged from the reclamation plant. EVMWD also can supplement make-up water with water from its Island Wells. EVMWD and TNHC (2005) indicate that no water acquisition rights would be needed to purchase reclaimed water. Additionally, a March 13, 2003, Escrow Agreement manages a Lake Maintenance Fund established as part of the Lake Elsinore Comprehensive Water Management Agreement signed with the City of Lake Elsinore.

Substantial human actions in the watershed and Lake Elsinore itself affect the lake's inflow, elevation, and discharge. Water can flow out of Lake Elsinore through an outlet channel and into Warm Springs Creek and subsequently to Temescal Wash whenever the lake level exceeds 1255-feet above msl. This only occurs under torrential rainfall conditions or when an extended wet period results in abnormally high lake elevations. The bottom elevation of Lake Elsinore is 1,223 feet msl. At an elevation of 1240-feet above msl, Elsinore Lake has a surface area of 3,074 acres and stores 38,519 AF.

Historically, the lake elevation was highly variable and has completely dried out including years 1850, 1880, 1954, and 1959 through 1963 (Dunbar, 1990, as cited in Joint Watershed Authority, 2005). Evaporation losses from Lake Elsinore are substantial, estimated at 56.2 inches per year, and are much larger than the average annual precipitation of 11.6 inches, which

[3]/ EVMWD's Regional Wastewater Treatment Plant provides tertiary treatment to wastewater such that it can be reused in a variety of applications and is suitable for contact recreation.

contributes to very unstable lake levels. Such evaporation losses translate to 15,500 AFY assuming a nominal elevation of 1245-feet above msl, an elevation that corresponds to a lake area of 3,319 acres.

Below Lake Elsinore, Temescal Wash flows about 28 miles in a northwesterly direction to its confluence with the Santa Ana River, just upstream of Prado dam (Joint Watershed Authority, 2005). Following the construction of the Back Basin berm and other improvements of the Lake Elsinore Management Project, Lake Elsinore has a 100-year flood elevation of 1263.3-feet above msl and a combined storage of about 150,000 AF, which includes the Back Basin (Joint Watershed Authority, 2005). Prior to this construction, in February 1980, a series of storms caused Lake Elsinore to rise to elevation 1265.7-feet above msl, causing substantial spill into Temescal Creek (personal communication, letter from R. Koplin, Chief, Engineering Division, S.C. Thomas, Senior Civil Engineer, Riverside County Flood Control District, dated August 15, 2003; USACE, 2003). After the flood control improvements were made, the highest peak flow recorded at USGS gage no. 11072100, Temescal Creek near the City of Corona, about 15 miles downstream from Lake Elsinore, was 4,030 cubic feet per second (cfs) on June 9, 2006 (USGS, 2005).

Under normal conditions when Lake Elsinore is not spilling, Temescal Wash receives discharges of highly treated tertiary effluent from the EVMWD Regional Plant and excess recycled water from the EMWD Temescal Valley Water Reclamation Facility (MWH, 2005).

1.2.2 Decker Canyon.

The proposed Decker Canyon Reservoir site would be located on the west side of the Elsinore Mountains within the upper drainage of San Juan Creek which does not drain to Lake Elsinore. The Decker Canyon site is located at the headwaters of its drainage basin and would drain only about 90 acres (0.14 square mile). Below the Decker Canyon Reservoir site, San Juan Creek flows generally towards the west and has a 176 square mile drainage area at its point of discharge into the Pacific Ocean at Doheny State Park near Dana Point and Capistrano Beach in Orange County. Stream flows in the Decker Canyon site are seasonal and intermittent. San Juan Creek becomes perennial near the mouth of the basin, owing largely to development and urban runoff (about 35 percent of the watershed is urbanized), possibly due to effluent from waste water treatment plants and similar inflows during the dry season.

Streamflow in San Juan Creek since 1986 has been measured at USGS Gage No. 11046530, La Novia Street Bridge near San Juan Capistrano, which has a drainage area of 109 square miles. Table 1–3 (Daily Discharge Statistics for USGS Gage No. 11046530 - San Juan Creek at La Novia Street Bridge near San Juan Capistrano) shows the annual stream flow data for this gage.

Table 1-3: Daily discharge (cfs) statistics
For USGS Gage No. 11046530 San Juan Creek at La Novia Street Bridge near San Juan Capistrano
(Water Years 1986 to 2004) (cfs)

Mean	Median	Maximum	Minimum	10 Percent Exceedance	60 Percent Exceedance
20.6	0.90	5700	0	20	Less than 0.1

Source: United States Geological Survey

1.3 Groundwater

The Project area is located within the South Coast Hydrologic Region. The South Coast Hydrologic Region has 56 delineated groundwater basins, eight basins of which are located in Subregion 8 (Santa Ana) and 27 basins are located in Subregion 9 (San Diego).

For the proposed LEAPS gen–tie, the area of the proposed Lake Switchyard is located within the Temescal Groundwater Subbasin (Basin No. 8.209). The subbasin underlies the southwest part of the upper Santa Ana valley. The Elsinore fault zone lies along the western boundary and the Chino fault zone crosses the northwestern tip of the subbasin. These fault zones are possible groundwater barriers. Dominant recharge is from percolation of precipitation on the valley floor and infiltration of stream flow within tributaries exiting the surrounding mountains and foothills.[4]

A portion of the proposed 230-kV transmission line upgrade traverses the San Luis Rey Valley Groundwater Basin (Basin No. 9.7). That groundwater basin underlies an east-west trending alluvium-filled valley in San Diego County. The major hydrologic feature is the San Luis Rey River which drains the valley overlying the basin. The basin is recharged by imported irrigation water applied on upland areas and by storm-flow in the San Luis Rey River and its tributaries. Movement of groundwater in the alluvial aquifer is westward towards the Pacific Ocean.[5]

The groundwater setting with respect to the pumped storage facility is described below.

1.3.1 Elsinore Groundwater Basin.

Lake Elsinore is located in the Elsinore Groundwater Basin (Basin No. 8-4). The basin underlies the Elsinore Valley in western Riverside County, and extends under a surface area of 40.2 square miles in Elsinore Valley. The basin is bounded on the southwest by the Santa Ana and Elsinore Mountains along the Willard fault, a play of the active Elsinore fault zone. The basin adjoins the Temecula Valley Groundwater Basin on the southeast at a low surface drainage divide. The basin is bounded on the northwest by the Temescal Subbasin of the Upper Santa Ana River Valley Groundwater Basin at a constriction in Temescal Wash. The basin is bounded on the northeast by non-water-bearing rocks of the Peninsular Ranges along the Glen Ivy fault.

Lake Elsinore lies in a closed basin formed between strands of the active Elsinore fault zone. The principal recharge of the basin is from infiltration of stream flow through alluvial fan deposits near the edges of the basin and through gravel deposits along the course of the San Jacinto River. Other contributing sources include infiltration from unlined channels, underflow from saturated alluvium and fractures within the surrounding bedrock mountains, and spreading of

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[4] / Ibid., Upper Santa Ana Valley Groundwater Basin, Temescal Subbasin, updated January 20, 2006.

[5] / Ibid., San Luis Rey Groundwater Basin, updated February 27, 2004.

water in recharge basins.[6] Additional information concerning the Elsinore Groundwater Basin is contained in the EVMWD's "Elsinore Basin Groundwater Management Plan"

Lake Elsinore is underlain by layers of clay, which greatly impedes the downward movement of groundwater because clay acts as an impervious barrier. Due to the geological layout and the surrounding faults, the Elsinore groundwater basin is essentially a closed groundwater basin. The groundwater level in the basin has dropped considerably with estimates of at least a 100-foot drop having occurred in the first half of the twentieth century alone (Joint Watershed Authority, 2005). Until recently, in addition to groundwater withdrawal for irrigation and other needs, groundwater has been pumped from the EVMWD Island Wells, near Lake Elsinore to provide an additional source of water for Lake Elsinore under the pilot discharge project in an attempt to increase and stabilize lake levels. As indicated in Table 1–4 (Estimated Groundwater Basin Budget for the Elsinore Groundwater Basin), an ongoing deficit of about 1,800 AFY is estimated.

Table 1-4: Estimated Groundwater Basin Budget for the Elsinore Groundwater Basin

Location	Average Location (1990–2000) (acre-feet per year)
Inflows	
Precipitation infiltration from rural areas	2,000
Precipitation infiltration from urban areas	800
Recharge from San Jacinto River	1,700
Recharge from Lake Elsinore	0
Return flows from applied water	600
Return flows from septic systems	1,000
Return flows via subsurface inflow	0
Total inflows	6,100
Outflows	
Groundwater pumping	7,900
Surface outflow	0
Subsurface outflow	0
Total outflows	7,900

[6] / Ibid., Elsinore Groundwater Basin, updated January 20, 2006.

Location	Average Location (1990–2000) (acre-feet per year)
Net Deficit	1,800

Source: MWH, 2003, as cited in Joint Watershed Authority, 2005

EVMWD developed a draft groundwater management plan for the Elsinore Basin, which was approved by its Board of Directors on March 24, 2005. The objective of the plan is to reverse the ongoing decline in groundwater levels and provide a long-term sustainable groundwater supply by recharging the basin with injection wells that would be located in the Lake Elsinore Back Basin and on the northwest side of the lake.

1.3.2 San Juan Creek Groundwater Basin.

The San Juan groundwater basin is a shallow basin that is essentially an underground flowing stream with limited storage capabilities. It is located under the San Juan Creek Watershed and tributary valleys in the southern part of Orange County, and is bounded to the west by the Pacific Ocean. Projects supporting groundwater recovery in the San Juan Creek groundwater basin have been initiated (Orange County, 2005).

The part of the groundwater basin near the area of the proposed Decker Canyon Reservoir site contains canyon bottomlands that are covered by alluvium and underlain by granitic bedrock. Evaporation amounts for the higher elevations associated with Decker Canyon are estimated to be 38.2 inches per year, slightly lower than the 56.2 inches per year at Lake Elsinore.

With regards to San Juan Creek, the USACE notes that groundwater exists in a generally narrow, shallow alluvial valley fill that has been deposited in the San Juan Canyon area and its tributaries. Groundwater in these alluvial fill areas is unconfined. Groundwater studies indicate the alluvial fill ranges from reported depths of 200 feet at the coast to zero at the end of the small alluvial fingers tributary to the main canyons. The main structural feature influencing groundwater movement is the Cristianitos fault, which traverses the area in a north-south direction and crosses San Juan Canyon at a narrows, about 3.5 miles upstream from the confluence of San Juan and Trabuco Creeks. This fault and narrows separate the groundwater alluvium into an upper and lower area.[7]

1.4 Water Quality

The proposed Lake-Case Springs transmission alignment crosses an estimated 60 USGS-depicted blue-line (jurisdictional) drainages. Most of these drainages are considered ephemeral. The transmission route, however, crosses two major watercourses that contained flowing water during the Project's general biological surveys (Los Alamos Creek and Temescal Wash). The Applicant is not aware of any available water quality data from those drainages that are intersected by the transmission line facilities. With respect to the proposed pumped storage facilities, water quality information is described below relative to existing water bodies and water quality constituents.

[7] / Op. Cit., San Juan Creek Watershed Management Study, Orange County, California, Feasibility Phase, Hydrology Appendix, p. 82.

1.4.1 Lake Elsinore.

Lake Elsinore's morphology and location in a rapidly urbanizing area and upstream land use activities contribute to the quality of storm-water runoff that affects the water quality in the San Jacinto River and, ultimately, Lake Elsinore (Joint Watershed Authority, 2005). Consequently, the overall water quality of Lake Elsinore typically does not meet applicable water quality standards, and the California Regional Water Quality Control Board, Santa Ana Region (SARWQCB) has listed Lake Elsinore as impaired under Section 303(d)[8] of the CWA for nutrients, organic enrichment/low dissolved oxygen (DO), sedimentation/siltation, and unknown toxicity.

Lake Elsinore water quality objectives are set by the SARWQCB and published in the "Santa Ana Basin Plan" (1995). According to the "Santa Ana Basin Plan," the existing beneficial uses within Lake Elsinore[9] include contact recreation (REC1), non-contact recreation (REC2), warm freshwater habitat (WARM), and wildlife habitat (WILD).

Table 1–5 (Beneficial Use Designation Definitions) shows the beneficial use designation definitions. Table 1–6 (Applicable Water Quality Objectives for Waters Potentially Affected by the Proposed Project) presents objectives for algae, temperature, turbidity, DO, pH, and total inorganic nitrogen.

Lake Elsinore is a large, shallow lake marking the terminus for flows in the San Jacinto River. Development throughout the watershed has led to stream diversions and groundwater withdrawals preventing surface flows from reaching Lake Elsinore in all but the wettest years. Its high evaporation rate (56.2 inches annual average) coupled with its low annual precipitation (11.6 inches annual average) and relatively small watershed area results in a shallow lake for most of the year (Joint Watershed Authority, 2005). Annual precipitation and runoff vary widely, and so do lake levels along with the amount of exposed shoreline. Throughout its history, Lake Elsinore has been subject to periods of extreme flooding or drying due to the semi-arid climate and varying runoff amounts.

The quality of the lake is also a function of lake levels. As lake levels fall because of low inflow or high evaporative losses, lake constituents such as nutrients and salinity become concentrated, and DO falls as the temperature of the shallower water rises in the summer (Joint Watershed Authority, 2004). These conditions are accompanied by algal blooms (exacerbating DO depletion), odors, and fish kills.

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[8]/ Under Section 303(d) of the Clean Water Act, states are required to submit a list of waters for which effluent limits will not be sufficient to meet all state water quality standards. The 303(d) listing process includes waters impaired from point and non-point sources of pollutants. States must also establish a priority ranking for the listed waters, taking into account the severity of pollution and uses. USEPA regulations that govern 303(d) listing can be found in 40 CFR 130.7.

[9]/ In 1988, the SWRCB adopted the Sources of Drinking Water Policy (Resolution No. 88-63) that directed the SARWQCB and the SDRWQCB to add the Municipal and Domestic Supply (MUN) Beneficial Use for all waterbodies not already so designated, unless they met certain exception criteria. Lake Elsinore is excepted under this provision.

1.4.2 San Juan and San Mateo Creeks.

Surface water in the upper San Juan Creek Watershed in proximity to the proposed Decker Canyon upper reservoir site is intermittent and directly related to precipitation. Because of the natural setting, surface flows originating from the upper watershed are of good quality during the brief times there is runoff; typically during winter rainy season. This contrasts with conditions in the lower watershed near the coast as creek water (limited groundwater mixed with urban nuisance flows) is strongly influenced by the expansive urban development surrounding the lower reaches and is consequently considered impaired under Section 303(d) for pathogens (specifically coliform bacteria). The San Mateo Creek Watershed (south of San Juan Creek Watershed where the Southern [Santa Rosa-Case Springs] segment of the transmission alignments would be located) is similar to San Juan Creek in that the upper, mountainous creek beds are often void of running water. The lower portion of the San Mateo Creek, which typically has some water, flows through Camp Pendleton, and it has been compromised by the USMC on-base's activities although not significantly enough to require listing under Section 303(d).

Both San Juan Creek and San Mateo Creek watersheds are under the jurisdiction of the California Regional Water Quality Control Board, San Diego Region (SDRWQCB) and subject to provisions of the "San Diego Basin Plan" (1994). The designated beneficial uses of San Juan Creek include agricultural and industrial process supply, contact and non-contact recreation, warm and cold fresh water habitat, and wildlife habitat. The designated beneficial uses of San Mateo Creek include REC1, REC2, WARM, COLD, WILD, RARE, and SPWN. Table 1–6 (Applicable Water Quality Objectives for Waters Potentially Affected by the Proposed Project) presents objectives for algae, temperature, turbidity, DO, pH, and total inorganic nitrogen.

Table 1-5: Beneficial Use Designation Definitions

Beneficial Use	Definition
AGR	Agricultural Supply waters are used for farming, horticulture, or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
COLD	Cold Freshwater Habitat waters support coldwater ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
IND	Industrial Service Supply waters are used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well re-pressurization.
RARE	Rare, Threatened or Endangered Species waters support habitats necessary for the survival and successful maintenance of plant or animal species designated under state or Federal law as rare, threatened or endangered.
REC1	Water Contact Recreation waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater

Beneficial Use	Definition
	activities, fishing, and use of natural hot springs.
REC2	Non-contact Water Recreation waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
SPWN	Spawning, Reproduction, and Development waters support high-quality aquatic habitats necessary for reproduction and early development of fish and wildlife.
WARM	Warm Freshwater Habitat waters support warmwater ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
WILD	Wildlife Habitat waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

Source: California Regional Water Quality Control Board, Santa Ana Region, 1995; California Regional Water Quality Control Board, San Diego Region, 1994

Table 1-6: Applicable Water Quality Objectives
For Waters Potentially Affected by the Proposed Project

Parameter	Santa Ana Basin Plan Objective	San Diego Basin Plan Objective
Algae	Waste discharges shall not contribute to excessive algal growth in inland surface receiving waters.	Does not exist.
Temperature	The temperature of waters designated WARM shall not be raised above 90°F June through October or above 78°F during the rest of the year as a result of controllable water quality factors. Lake temperatures shall not be raised more than 4°F above established normal values as a result of controllable water quality factors.	Natural water temperatures of basin waters shall not be altered unless it can be demonstrated to the satisfaction of the San Diego Water Board that such alteration does not affect beneficial uses.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits: 0–50 NTUs not to exceed 20%, 50–100 NTU increases not to exceed 10 NTU, greater than 100 NTUs not to exceed 10%.	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Inland surface waters shall not contain turbidity in excess of 20 NTUs more than 10% of the time during any 1-year period.

Parameter	Santa Ana Basin Plan Objective	San Diego Basin Plan Objective
Dissolved Oxygen	Depressed below 5 mg/l for waters designated WARM, as a result of controllable water quality factors. In addition, waste discharges shall not cause the median DO concentration to fall below 85% of saturation or the 95th percentile concentration to fall below 75% of saturation within a 30-day period.	DO concentrations shall not be less than 5.0 mg/l in inland surface waters with designated MAR or WARM beneficial uses or less than 6.0 mg/l in waters designated COLD beneficial uses. The annual mean DO concentration shall not be less than 7 mg/l more than 10% of the time.
pH	The pH of inland surface waters shall not be raised above 8.5 or depressed below 6.5 as a result of controllable water quality factors.	The pH value shall not be changed at any time more than 0.2 pH units from that which occurs naturally.
Total Inorganic Nitrogen	1.5 mg/l	Does not exist.
Notes: mg/l – milligrams per liter; NTUs – Nephelometric turbidity units		

Source: Santa Ana Water Board, 1995; San Diego Water Board, 1994

- **Water temperature**. The SARWQCB and others have been involved in water quality monitoring since June 2002 as part of improvement projects as discussed in Section 3.2 (Cumulatively Affected Resources). Since 2002, vertical lake sample profiles were conducted at over 10 positions located throughout Lake Elsinore. Vertical profiles taken at sampling site 9 (the deepest sampling site located in the central part of the lake) show strong seasonal differences in temperature, with daytime surface summer water temperatures reaching 29 to 30° Celsius (C), while the lower water column was typically 25 to 27°C. A transition to cooler temperatures begins in the fall, with the surface temperatures cooling to approximately 20°C in October. Water column temperatures then cool further, with temperatures ranging from 12 to 14°C from November to March. The lake generally begins warming in April, with modest stratification present during this time, while strong heating and stratification were observed in late May to early June.

  The Applicant filed with FERC water temperature data for waters in Decker Canyon in the upper San Juan Creek Watershed and reported temperatures between 13.3 and 17.0°C (4 field measurements taken April 28, 2005, post precipitation event). No water temperature data were collected for waters in San Mateo Creek in the upper San Mateo Creek Watershed. Decker Canyon only experiences surface flows during precipitation events. Sampling to date has not isolated the difference between storm water and seepage. San Mateo Creek only experiences surface flows during storm events, and temperature data do not exist for this watershed.

- **Dissolved oxygen**. The SARWQCB has listed Lake Elsinore as impaired for failing to meet numerous Santa Ana Basin Plan objectives, including DO objectives. Measurements that are below state objectives are continually recorded throughout the water column for the majority of the year. Low DO levels in the lake result from aerobic decomposition of algae and other organic material in the bottom waters, nighttime respiration of phytoplankton, plankton blooms, and higher water temperature (warm water contains less oxygen than cold water) during summer months. The Santa Ana Water Board has developed and implemented measures from the draft Total Maximum Daily Load (TMDL) for nutrients to improve water quality and reverse the presently compromised conditions.

DO levels within Lake Elsinore exhibit spatial and temporal trends that vary with lake temperature and depth, which are dynamic throughout the year. In August 2002, oxygen was substantially depleted across the lake, resulting in a fish kill (levels recorded below 1 milligram per liter (mg/l) in the lower third of the water column). As the lake began to mix in October and November 2002, the lake generally exhibited higher concentrations but still reduced DO levels (5 mg/l) near the sediments relative to the surface (8 to 10 mg/l). This period of mixing was followed by a sharp decline in DO throughout the water column in early December 2002. Conversely, Lake Elsinore was generally well oxygenated during the winter of 2003. Historically, DO levels have been observed between 0.1 and 16 mg/l and vary greatly with season, temperature, and depth.

The Applicant collected a single DO measurement of 8.9 mg/l from a sample collected from Decker Canyon in April 28, 2005. No DO data exist for waters in the upper San Mateo Creek Watershed. San Mateo Creek Watershed, due to its relative similarity (intermittent, upper-watershed setting in the same southern California mountain range) to Decker Canyon is assumed to exhibit similar water quality traits. As such, water (when present) within these upper watersheds is likely to be well oxygenated.

- **Nutrients.** The SARWQCB recognizes that the narrative water quality objectives set to protect the beneficial uses of Lake Elsinore are not being met as a result of high nutrient concentrations stimulating excessive algae growth and compromising DO levels. As such, Lake Elsinore is listed as impaired under Section 303(d) for nutrients, and this impairment requires the establishment of a TMDL for the pollutants causing the impairment (nitrogen and phosphorus).

  Lake Elsinore is technically eutrophic in that it exhibits the following characteristics: (1) large algae blooms (chlorophyll-a >50 micrograms per liter [µg/l]) and common presence of blue-green algae (cyanobacteria), specifically Microcystis; (2) large seasonal and daily swings in concentrations of DO; anoxic values that have been recorded in deeper waters during most summers; (3) low water clarity; Secchi disc values less than 1 meter; (4) high concentrations of inorganic nitrogen; and (5) high concentrations of total phosphorus. These observations substantiate the pilot “Lake Elsinore Recycled Water Project,” an effort that enables EVMWD to discharge treated wastewater into Lake Elsinore to maintain higher lake levels in hope of minimizing effects from high evaporative losses and low inflow rates. This effort is designed to help restore the water quality of Lake Elsinore to meet state objectives.

  Sampling results show that the total phosphorus concentration in Lake Elsinore has generally been increasing between 2002 and 2004. Total phosphorus concentrations vary with the season but were generally observed at approximately 0.3 mg/l throughout the second half of 2002 and rising to approximately 0.5 mg/l in early 2004.

Total nitrogen concentrations were variable between 2000 and 2004. Average summer concentrations were approximately 3.0 mg/l in 2000 and 2001 rising to approximately 5.0 mg/l in 2002 and 2003. Winter total nitrogen concentrations for all sampled sites from 2003 to 2004 averaged 11.8 mg/l; however, data presented by the Applicant exhibit considerable variability between days and pronounced swings seasonally and annually.

Sampling information filed by the Applicant indicates that the total nitrogen:total phosphorus ratio was variable since sampling began in summer 2000. From summer 2000 through summer 2002, there were periods of strong phosphorus limitation (ratios up to 50:1), interrupted with periods during the winter of co-limitation (~15:1) and brief periods of nitrogen limitation (~5:1). The general trend since June 2002 has been moving toward nitrogen limitation.

Field sampling was conducted by the Applicant to characterize the waters of Decker Canyon following a precipitation event. The total nitrogen concentration below the Decker Canyon upper reservoir site was reported at 1.4 mg/l. All other samples were below the reporting limit. No samples has been collected by the Applicant within the upper San Mateo Creek Watershed.

- **Algae** (Chlorophyll and Transparency). According to the SARWQCB, hyper-eutrophication (over enrichment of nutrients) of nitrogen and phosphorus is the most severe water quality problem in Lake Elsinore (SARWQCB, 2001). These elevated nutrient concentrations cause algae blooms that also result in low DO levels, which further result in fish kills. The presence of unsightly amounts of algae conflicts with the beneficial uses of Lake Elsinore, specifically WARM, REC-1, and REC-2, and is directly linked to the implementation of the nutrients TMDL. Chlorophyll concentrations show a slight seasonal trend with peaks in the late spring-summer. The SARWQCB recorded a maximum concentration of about 400 µg/l in fall 2002; however, 200 µg/l is a more typical concentration observed since 2003. Algae blooms are known to occur in the lake and result in floating mats of algae. These blooms typically occur in the summer to fall season but could potentially occur at anytime during the year when there are sufficient nutrients and ample sunlight. Secchi depths, an indicator of the lake's transparency, have been relatively stable since June 2002 at approximately 0.2 meter.

  Samples from the San Juan Creek and San Mateo Creek watersheds are not available to include in this discussion. Given the remote nature and the intermittent nature of the waters potentially affected by the Project and the low nutrient concentrations observed in field samples, it is unlikely that large amounts of algae as a result of nutrient enrichment would compromise the waters.

- **pH**. The SARWQCB sampling program has observed that the pH of Lake Elsinore has averaged slightly greater than 9 between April 2002 and June 2004, although the pH profiles show some vertical and temporal trends. The range of pH values recorded during this time period is 8.7 to 9.5. High pH values are often the result of the respiration of aquatic organisms (e.g., algae). The build up of carbon dioxide in the water leads to a chain of chemical reactions that ultimately increase the alkalinity of the water (increased pH). The Applicant reported pH values between 7.42 and 7.65 from samples taken Decker Canyon in December 2004 and April 2005 shortly after rain events. Information about the water quality of upper San Mateo Watershed is not available, but is likely to be similar to the waters in the upper San Juan Watershed.

The groundwater in the San Juan Creek watershed is typically high dissolved solids and salts. Table 1–7 (San Juan Basin Water Quality Data [1987]) provides general groundwater quality data for 1987.[10] In general, groundwater quality problems in the San Juan Creek watershed are related to high dissolved solids content, rather than bacteriological, toxins, or heavy metal concentrations.[11]

Table 1-7: San Juan Basin Water Quality Data (mg/l)

Subbasin	TDS	SO_3	Iron	Mn
Lower San Juan	1500-2000	500-750	>2.0	0.5-1.5
Middle San Juan	500-1000	250-500	0.3-2.0	0.5-1.5
Upper San Juan	0-500	0-250	0-0.3	0-0.05

Source: Capistrano Valley Water District

4.10.2 Hydrology and Water Quality Regulatory Setting

The following general discussion is presented of certain Federal, State, and local statutes and regulations that may be most applicable to an understanding of the Project's regulatory setting.

- Federal Clean Water Act. The Federal Water Pollution Control Act of 1972 (33 U.S.C. 1251 et seq.), known as the Federa; Clean Water Act (CWA), established a national policy designed to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The CWA requires states to develop water quality standards consisting of a detailed description of the hydrologic descriptions of the waterbodies, the beneficial uses which apply to each waterbody, and the water quality criteria (objectives) which will protect those uses. As specified, "[e]ach state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish, and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation (40 CFR 131.11[a]).

  In 1972, the CWA was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to waters of the United States (WoUS) from any point source.[12] In 1987, the CWA was further amended to establish a framework for regulating urban runoff. The 1987 amendment required that the USEPA

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[10] / Ibid., p. 84.

[11] / Op. Cit., San Juan Creek Watershed Management Plan, p. III-7.

[12] / A "point source" is defined as "any discernible, confined, and discrete conveyance" of pollutants to a water body. The definition of discrete conveyance includes, but is not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

establish regulations for permitting (under the NPDES permit program) of municipal and industrial storm water discharges. The USEPA published final regulations regarding storm water discharges on November 16, 1990 (40 CFR Parts 122, 122, and 124). The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by a NPDES permit.[13] Under the 1987 amendment and implementing regulations, storm water runoff pollution must be controlled to the maximum extent practicable (MEP).

The CWA requires states to adopt (and the USEPA to approve) water quality standards for water bodies.[14] Water quality standards consist of designated beneficial uses for a particular water body, along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents or narrative statements that represent the quality of water that supports a particular use. Because California has not established a complete list of acceptable water quality criteria, the USEPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (CTR) (40 CFR 131.38). Water bodies not meeting water quality standards are deemed "impaired" and, under Section 303(d) of the CWA, are placed on a list of impaired waters for which a TMDL must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL is allocated among current and future pollutant sources to the water body. TMDL is a number that represents the assimilative capacity of water for a particular pollutant or the amount of a particular pollutant that water can receive without impact to its beneficial uses.

The CWA effectively prohibits discharges of storm water from most construction sites unless the discharge is in compliance with a NPDES permit. The SWRCB is the permitting authority in California and has adopted a "General Permit for Stormwater Discharges Associated with Construction Activities" (General Permit)[15] governing storm water and authorized non-storm water flows from all construction sites one acre and larger throughout California. The General Permit requires construction-site operators to develop and implement a storm water pollution prevention plan (SWPPP) and an associated monitoring program and, for projects discharging directly into waters impaired due to sedimentation or involving potential discharge of non-visible contaminants that

[13]/The CWA requires that MS4 permits effectively prohibit non-storm water discharges into the storm sewers as well as reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and systems, design and engineering methods, and other provisions appropriate for the control of such pollutants (Source: United States Environmental Protection Agency, Preliminary Data Summary of Urban Storm Water Best Management Practices, August 1999).

[14]/In California, the USEPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and its nine regional water quality control boards. The Regional Water Quality Control Board, Santa Ana Region (SARWCB) and the California Regional Water Quality Control Board, San Diego Region (SDRWQCB) are the local boards with jurisdiction over the Project sites.

[15]/State Water Resources Control Board, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity, SWRCB Order No. 99-08-DWQ, NPDES No. CAS000002.

may exceed water quality objectives, a storm water sampling and analysis strategy (SWSAS) to meet CWA technology standards and to prevent construction sites from contributing to excursions of water quality standards.

- National Flood Insurance Reform Act. The Federal Emergency Management Agency (FEMA), a part of the Department of Homeland Security, prepares flood insurance rate maps (FIRM) in order to identify those areas that are located within the 100-year floodplain boundary,[16] termed "Special Flood Hazard Areas" (SFHAs). A 100-year flood does not refer to a flood that occurs once every 100 years but refers to a flood level with a one percent chance of being equaled or exceeded in any given year.[17] The SFHAs are subdivided into insurance risk rate zones. Areas between the 100 and 500-year flood boundaries are termed "moderate flood hazard areas." Areas located outside the 500-year flood boundary, are termed "minimal flood hazard areas."
- Executive Order 11988 – Floodplain Management. Executive Order (EO) 11988 directs all Federal agencies to seek to avoid, to the extent practicable and feasible, all short- and long-term adverse impacts associated with floodplain modifications and to avoid direct and indirect support of development within 100-year floodplains whenever there is a reasonable alternative available.
- Cobey-Alquist Flood Plain Management Act. The Cobey-Alquist Flood Plain Management Act, codified in Sections 8400-8415 of the CWC, states that a large portion of land resources of the State are subject to recurrent flooding. The public interest necessitates sound development of land use, as land is a limited, valuable, and irreplaceable resource, and the floodplains of the State are a land resource to be developed in a manner that, in conjunction with economically justified structural measures for flood control, will result in prevention of loss of life and of economic loss caused by excessive flooding.

  The primary responsibility for planning, adoption, and enforcement of land-use regulations to accomplish floodplain management rests with local levels of government. It is the State's policy to encourage local government to plan land-use regulations to accomplish floodplain management and to provide State assistance and guidance.

- California Water Code. The Porter-Cologne Water Quality Control Act (Division 1, Chapter 2, Article 3, Section 13000 et seq., CWC) (Porter-Cologne) constitutes a comprehensive plan for protecting the quality and maximizing the beneficial use of the State's waters.

  As specified therein, the State "Legislature finds and declares that. . . the quality of all the waters of the State shall be protected for use and enjoyment by the people of the state... activities and factors which may affect the quality of the waters of the state shall

[16]/As defined in the Standard Flood Insurance Policy (SFIP), "flood" is defined as "[a] general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waters or from the unusual and rapid accumulation or runoff of surface waters from any source."

[17]/Modern hydrologists define floods in terms of probability, as expressed in percentage rather than in terms of return period (recurrence interval). Return period (the N-year flood) and probability (p) are reciprocals, that is, $p = 1/N$. A flood having a 50-year return frequency (Q_{50}) is commonly expressed as a flood with the probability of recurrence of 0.02 (2 percent chance of being exceeded) in any given year.

be regulated to attain the highest water quality which is reasonable."[18] Under Porter-Cologne, the State's RWQCBs were required to: (1) formulate and adopt water quality control plans for all areas within the region[19]; (2) establish water quality objectives that "will ensure the reasonable protection of beneficial uses"[20] of State's waters; and (3) prescribe waste discharge requirements governing discharges to land and waters within the regions. Porter-Cologne establishes the principal California program for water quality control. Under Porter-Cologne, the SWRCB is mandated to implement the provisions of the CWA, which delegation is authorized by that Federal act.

To implement and enforce the provisions of Porter-Cologne and the CWA, Porter-Cologne divides the State into nine regional boards that, under the guidance and review of the SWRCB, implement and enforce the provisions of both the State and Federal statutes. The Project is located within Region 8 (Santa Ana) and Region 9 (San Diego) and falls under the jurisdiction of the SARWQCB and SDRWQCB.

As further indicated in the CWC, Section 100 declares that it is policy of the State that "the water resources of the state be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." Under Section 13000, the Legislature declared that the people of the State have a primary interest in the conservation, control, and utilization of the water resources, and that the "quality of all the waters of the State shall be protected for use and enjoyment by the people of the state. The Legislature further finds and declares that activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."

As specified in Section 13751, every person who digs, bores, or drills a water well, cathodic protection well, ground water monitoring well, or geothermal heat exchange well, abandons or destroys such a well, or deepens or reperforates such a well shall file with the California Department of Water Resources (Department) a report of completion within sixty days from the date that construction, alteration, abandonment, or destruction is complete. Section 13800.5(a)(1) further specifies that the Department shall develop recommended standards for construction, maintenance, abandonment, or destruction. Those standards are contained in the Department's "California Well Standards, Bulletin 74-90 (Supplement to Bulletin 74-81)."

- California Code of Regulations. The California Department of Health Services (DHS) is responsible for establishing uniform Statewide reclamation criteria to ensure that the use of recycled water is not detrimental to public health and protects beneficial uses. The existing DHS criteria include treatment requirements for recycled water used to create or

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[18] / Section 13000, California Water Code.

[19] / Section 13240, California Water Code.

[20] / Section 13241, California Water Code.

augment recreational impoundments. In Title 22, Division 4, Chapter 3 (Water Recycling Criteria), the DHS sets forth water quality criteria, treatment process requirements, and treatment reliability criteria for reclamation operations. Section 60305 specifies that recycled water used as a source supply for non-restricted recreational impoundment shall be disinfected tertiary recycled water subjected to conventional treatment. Disinfected tertiary recycled water that has not received conventional treatment may be used for non-restricted recreational impoundment provided that the recycled water is monitored for the presence of pathogenic organisms in accordance with certain conditions. The degree of treatment specified represents an approximately 5-log reduction in the virus content of the water. The DHS has determined that this degree of virus removal is necessary to protect the health of people using the impoundments for water contact recreation. The DHS has developed wastewater disinfection guidelines[21] for discharges of wastewater to surface waters where water contact recreation (REC1) is a beneficial use. The guidelines recommend the same treatment requirements for wastewater discharges to REC1 waters as those stipulated in Title 22 for supply of recycled water to non-restricted recreational impoundments.

Pursuant to Section 8589.5 of the CGC, inundation maps showing the areas of potential flooding in the event of sudden or total failure of any dam, the partial or total failure of which the Office of Emergency Services (OES) determines, after consultation with the California Department of Water Resources, would result in death or personal injury, shall be prepared and submitted to the OES. Sections 2575-2578.3 in Title 19 (Dam Inundation Mapping Procedures) establish State regulations in compliance therewith.

- California Fish and Game Code. The CF&GC contain several provisions that regulate nonpoint source discharges. As specified under Section 5650 of the CFGC, except as authorized by a State or Federal permit, "it is unlawful to deposit in, permit to pass into, or place where it can pass into the waters of this State" any "petroleum or residuary product of petroleum, or carbonaceous material or substance," any "sawdust, shavings, slabs, edgings," and any "substance or material deleterious to fish, plant life, or bird life."
- California Antidegradation Policy. California's Antidegradation Policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California (SWRCB Resolution No. 68-16), restricts degradation of surface and ground waters. In particular, this policy protects waterbodies where existing quality is higher than necessary for the protection of beneficial uses. Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface and groundwaters must: (1) be consistent with maximum benefit to the people of the State; (2) not unreasonably affect present and anticipated beneficial use of the water; and (3) not result in water quality less than that prescribed in water quality plans and policies. Any actions that can adversely affect surface waters are also subject to the Federal Antidegradation Policy (40 CFR 131.12) developed under the CWA.

[21]/ California Department of Health Services, Wastewater Disinfection for Health Protection, 1987.