5.15 Water Resources

This section provides a discussion of the existing water resources near the Huntington Beach Energy Project (HBEP) site and assesses the potential effects of HBEP construction and operation on water resources. Specifically, this chapter discusses the HBEP and its potential effects in the following areas:

- Water supply and quality
- Disposal of wastewater
- Stormwater discharge
- Flooding

Section 5.15.1 discusses the existing hydrologic environment. Potential environmental effects of the HBEP construction and operation on water resources are discussed in Section 5.15.2. A discussion of cumulative project effects is presented in Section 5.15.3. Section 5.15.4 discusses proposed mitigation measures that will prevent significant impacts. Section 5.15.5 presents applicable laws, ordinances, regulations, and standards (LORS) related to water resources. Section 5.15.6 describes permits that relate to water resources, lists contacts with relevant regulatory agencies, and presents a schedule for obtaining permits. References cited are listed in Section 5.15.7.

5.15.1 Affected Environment

The HBEP site is located in an industrial area of Huntington Beach at 21730 Newland Street, just north of the intersection of the Pacific Coast Highway (Highway 1) and Newland Street. The project will be located entirely within the existing Huntington Beach Generating Station, an operating power plant. The HBEP site is bounded on the west by a manufactured home/ recreational vehicle park, on the north by a tank farm, on the north and east by the Huntington Beach Channel and residential areas, on the southeast by the Huntington Beach Wetland Preserve/Magnolia Marsh wetlands, and to the south and southwest by the Huntington Beach State Park and the Pacific Ocean. The site is located on a gently sloping coastal plain.

HBEP is a 939-megawatt combined-cycle power plant, consisting of two power blocks. Each power block is composed of three combustion turbines with supplemental fired heat recovery steam generators (HRSG), a steam turbine generator, an air-cooled condenser, and ancillary facilities. HBEP will reuse existing onsite potable water, natural gas, stormwater, process wastewater, and sanitary pipelines and electrical transmission facilities. No offsite linear developments are proposed as part of the project.

The project will use potable water, provided by the City of Huntington Beach, for construction and operational process and sanitary uses. During operation, stormwater and process wastewater will be discharged to a retention basin and then ultimately to the Pacific Ocean via an existing outfall. Sanitary wastewater will be conveyed to the Orange County Sanitation District via the existing City of Huntington Beach sewer connection. Two 230-kilovolt (kV) transmission interconnections will connect HBEP Power Blocks 1 and 2 to the existing onsite Southern California Edison 230-kV switchyard.

HBEP construction will require the removal of the existing Huntington Beach Generating Station Units 1, 2, and 5. Demolition of Unit 5, scheduled to occur between the fourth quarter of 2014 and the end of 2015, will provide the space for the construction of HBEP Block 1. Construction of Blocks 1 and 2 are each expected to take approximately 42 and 30 months, respectively, with Block 1 construction scheduled to occur from the first quarter of 2015 through the second quarter of 2018, and Block 2 construction scheduled to occur from the first quarter of 2018 through the second quarter of 2020. Removal/demolition of existing Huntington Beach Generating Station Units 1 and 2 is scheduled to occur from the fourth quarter of 2020 through the third quarter of 2022.

Existing Huntington Beach Generating Station Units 3 and 4 were licensed through the California Energy Commission (CEC; 00-AFC-13C) and demolition of these units is authorized under that license and will proceed irrespective of the HBEP. Therefore, demolition of existing Huntington Beach Generating Station Units 3 and 4 is not part of the HBEP project definition. However, to ensure a comprehensive review of potential project impacts, the demolition of existing Huntington Beach Generating Station Units 3 and 4 is included in the cumulative impact

assessment. Removal/demolition of existing Huntington Beach Generating Station Units 3 and 4 will be in advance of the construction of HBEP Block 2.

HBEP construction will require both onsite and offsite laydown and construction parking areas. Approximately 22 acres of construction laydown will be required, with approximately 6 acres at the Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the AES Alamitos Generating Station (AGS) used for construction laydown (component storage only/no assembly of components at AGS). During HBEP construction, the large components will be hauled from the construction laydown area at the AGS site to the HBEP site as they are ready for installation.

Construction worker parking for HBEP and the demolition of the existing units at the Huntington Beach Generating Station will be provided by a combination of onsite and offsite parking. A maximum of 330 parking spaces will be required during construction and demolition activities. As shown on Figure 2.3-3 in Section 2.0, Project Description, construction/demolition worker parking will be provided at the following locations:

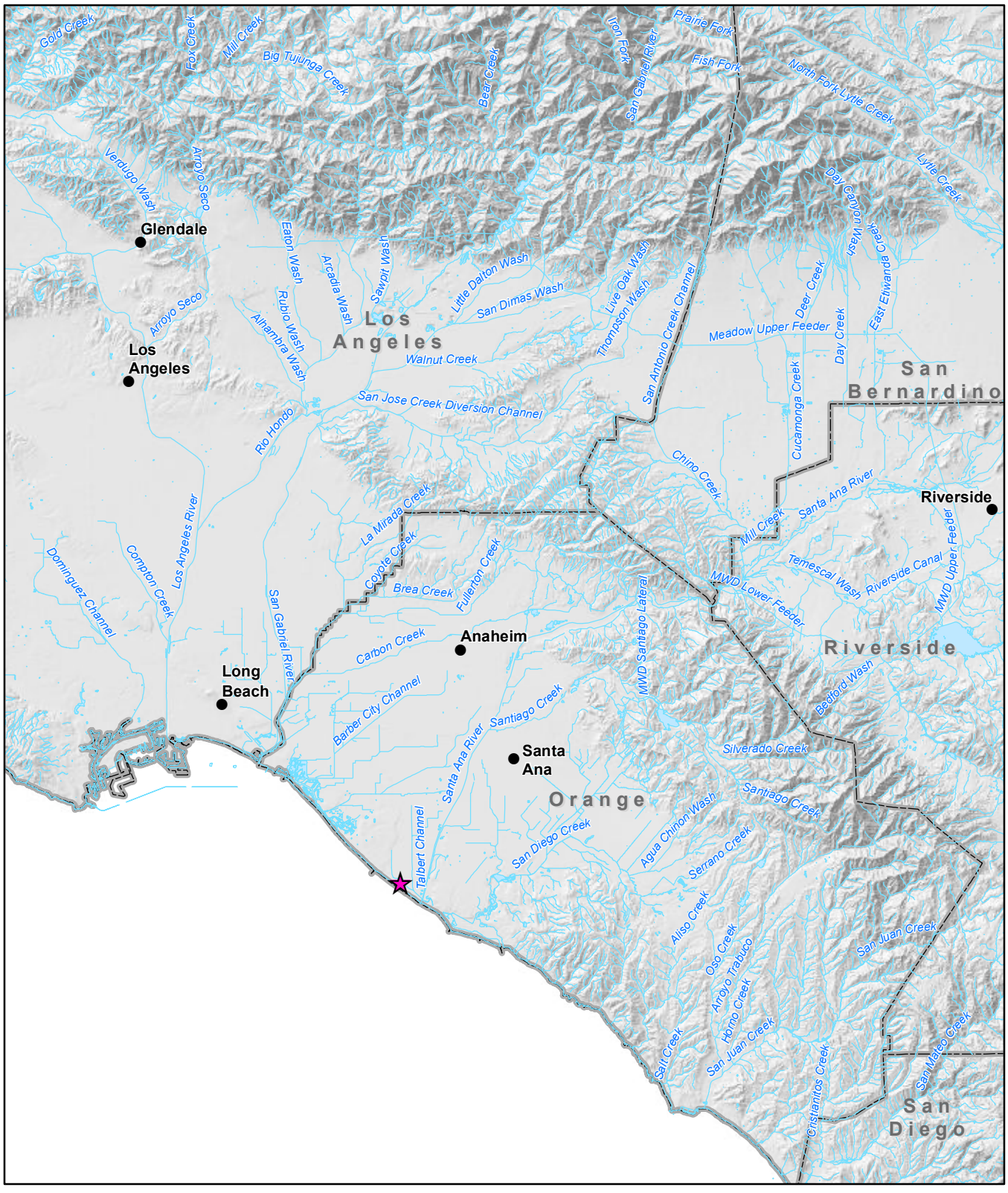
- Approximately 1.5 acres onsite at the Huntington Beach Generating Station (approximately 130 parking stalls)
- Approximately 3 acres of existing paved/graveled parking located adjacent to HBEP across Newland Street (approximately 300 parking stalls)
- Approximately 2.5 acres of existing paved parking located at the corner of Pacific Coast Highway and Beach Boulevard (approximately 215 parking stalls)
- 225 parking stalls at the City of Huntington Beach shore parking west of the project site.
- Approximately 1.9 acres at the Plains All American Tank Farm located on Magnolia Street (approximately 170 parking stalls)

5.15.1.1 Water Features, Rainfall, and Drainage

The HBEP site is adjacent to Huntington Beach State Park and is approximately 900 feet inland from the Pacific Ocean. The site is located in the East Coastal Plain subarea of the Santa Ana River Hydrologic Area (Santa Ana RWQCB, 2008). The Magnolia Marsh wetland preserve is along the southeastern border of the site. Other nearby wetland preserves include the Brookhurst Marsh, Talbert Marsh, and Newland Marsh. The Huntington Beach Channel runs along the northeastern boundary of the HBEP site and the Talbert Channel is located approximately 0.5 mile to the east of the site (Figure 5.15-1). The Santa Ana River runs north to south approximately 1.25 miles to the east of the project site. The Santa Ana River basin covers approximately 2,800 square miles (SAWPA, 2012). The Santa Ana River's headwaters are located in the San Bernardino Mountains and the river travels through Orange County and portions of Riverside, San Bernardino, and Los Angeles counties before reaching its confluence with the Pacific Ocean (SAWPA, 2012).

The Regional Water Quality Control Boards (RWQCB) make critical water quality decisions for their designated region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. Each RWQCB adopts water quality control plans, or Basin Plans, which establish water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives within the Basin Plans. For those waters not attaining water quality standards, the RWQCB establishes total maximum daily loads (TMDLs) and a program of implementation to meet the TMDL.[1]

[1] Section 303(d) of the Clean Water Act requires that the states make a list of waters that are not attaining water quality standards. For waters on this list, the states are to develop total maximum daily loads or TMDLs. A TMDL must account for all sources of the pollutants that caused the water to be listed. Federal regulations require that the TMDL, at a minimum, account for contributions from point sources (federally permitted discharges) and contributions from nonpoint sources. TMDLs are established at the level necessary to implement the applicable water quality standards. In California, the State Water Resources Control Board has interpreted state law (Porter-Cologne Water Quality Control Act, California Water Code Section 13000 et. seq.) to require that implementation be addressed when TMDLs are incorporated into Basin Plans. The Porter-Cologne Act requires each RWQCB to formulate and adopt Basin Plans for all areas within its region. It also requires that a program of implementation be developed that describes how water quality standards will be attained. TMDLs can be developed as a component of the program of implementation, thus triggering the need to describe the implementation features, or alternatively as a water quality standard. When the TMDL is established as a standard, the program of implementation must be designed to implement the TMDL (SWRCB, n.d.).



Legend

- AES Huntington Beach Energy Project
- City
- County Boundary
- Water Features
- Waterbody

N

0 4 8 Miles

FIGURE 5.15-1
Surface Water Resources
AES Huntington Beach Energy Project
Huntington Beach, California

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The HBEP site is within the boundaries of the Santa Ana RWQCB. Water quality objectives for the Santa Ana River are contained in the Water Quality Control Plan for the Santa Ana River Basin (Santa Ana RWQCB, 2008). The Santa Ana River and Huntington Beach State Park are considered impaired water bodies on the 2010 U.S. Environmental Protection Agency (EPA)-approved TMDL list. Table 5.15-1 lists the pollutants for which the Santa Ana River and Huntington Beach State Park are impaired and the proposed TMDL completion dates.

TABLE 5.15-1
Clean Water Act Section 303(d) List of Water Quality Impairments

Pollutant/Stressor	Potential Sources	Reach Number	Proposed TMDL Completion
Santa Ana River			
Cadmium	Unknown	6	2021
Copper	Unknown	3,6	2021
Lead	Unknown	3, 6	2021
Indicator Bacteria	Unknown	2	2021
Pathogens	Dairy (Reach 3), Unknown (Reach 4)	3, 4	2021 (Reach 3), 2019 (Reach 4)
Huntington Beach State Park			
PCBs (Polychlorinated biphenyls)	Unknown		2019

Source: State Water Resources Control Board (SWRCB), 2012

Huntington Beach experiences mild summers and cool winters. August is the warmest month of the year, with an average maximum temperature of 73 degrees Fahrenheit (°F). December is the coldest month of the year, with an average maximum temperature of 63.6°F. Annual average precipitation in Huntington Beach is 11.65 inches. The wettest month of the year is January with an average rainfall of 2.60 inches (IDCIDE, 2010). Table 5.15-2 provides average historical rainfall from the nearby meteorological station in Newport Beach Harbor, California. The meteorological station is located approximately 6 miles from the HBEP site.

TABLE 5.15-2
Rainfall near the HBEP Site (1921-2012)

Precipitation	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average (inches)	11.05	2.21	2.32	1.73	0.92	0.23	0.07	0.01	0.06	0.21	0.38	1.08	1.85
Maximum (inches)	27.90	11.07	12.22	7.75	5.05	2.73	0.99	0.26	1.82	3.13	3.77	6.42	6.84
Minimum (inches)	3.56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Western Regional Climate Center (WRCC), 2012

5.15.1.2 Groundwater

The HBEP site is within the Coastal Plain of Orange County Groundwater Basin (Orange County Basin), which lies along the coast and has a surface area of 350 square miles (Figure 5.15-2). The Orange County Basin underlies a coastal alluvial plain in the northwestern portion of Orange County. The basin is bounded by consolidated rocks exposed on the north in the Puente and Chino Hills, on the east in the Santa Ana Mountains, and on the south in the San Joaquin Hills. The basin is bounded by the Pacific Ocean on the southwest and by a low topographic divide approximated by the Orange County-Los Angeles County line on the northwest. The basin underlies the lower Santa Ana River watershed (DWR, 2004).

The Orange County Basin is primarily made up of deep structural depression containing a thick accumulation of fresh water-bearing interbedded marine and continental sand, silt, and clay deposits (DWR, 2004). The total capacity of the Orange County Basin is 38,000,000 acre-feet (DWR, 1967). Orange County Water District manages groundwater in the Basin using a detailed model to determine potential effects of changes in pumping and recharge. Orange County Water District monitors the water level in 521 wells annually (Hintlian, 2000). Average yields for municipal/irrigation wells range between 4,000 and 6,000 gallons per minute (gpm) (DWR, 2004). Since

1990, the average levels in the coastal area have dropped several feet; however, overall groundwater levels for the basin have risen about 15 feet (DWR, 2004).

In general, the groundwater within the basin is primarily sodium-calcium bicarbonate (DWR, 2004). Areas of poor water quality exist throughout the basin, including areas of sea water intrusion near the coast. Increasing salinity, high nitrates, and methyl tertiary butyl ether (MTBE) are the main water quality issues in the basin. Orange County Water District monitors 411 wells 2 to 20 times per year for water quality (Hintlian, 2000). Water quality in public supply wells is shown in Table 5.15-3. The HBEP site is within the boundaries of the Orange County Groundwater Management Zone as defined by the Santa Ana RWQCB. Beneficial uses for the Orange County Groundwater Management Zone include municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PROC) (Santa Ana RWQCB, 2008).

TABLE 5.15-3
Water Quality in Public Supply Wells

Constituent Group	Number of wells sampled[a]	Number of wells with a concentration above Maximum Contaminant Level (MCL)[b]
Inorganics – Primary	249	1
Radiological	253	5
Nitrates	267	15
Pesticides	268	0
VOCs and SVOCs	268	7
Inorganics – Secondary	249	21

[a]Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

[b]Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

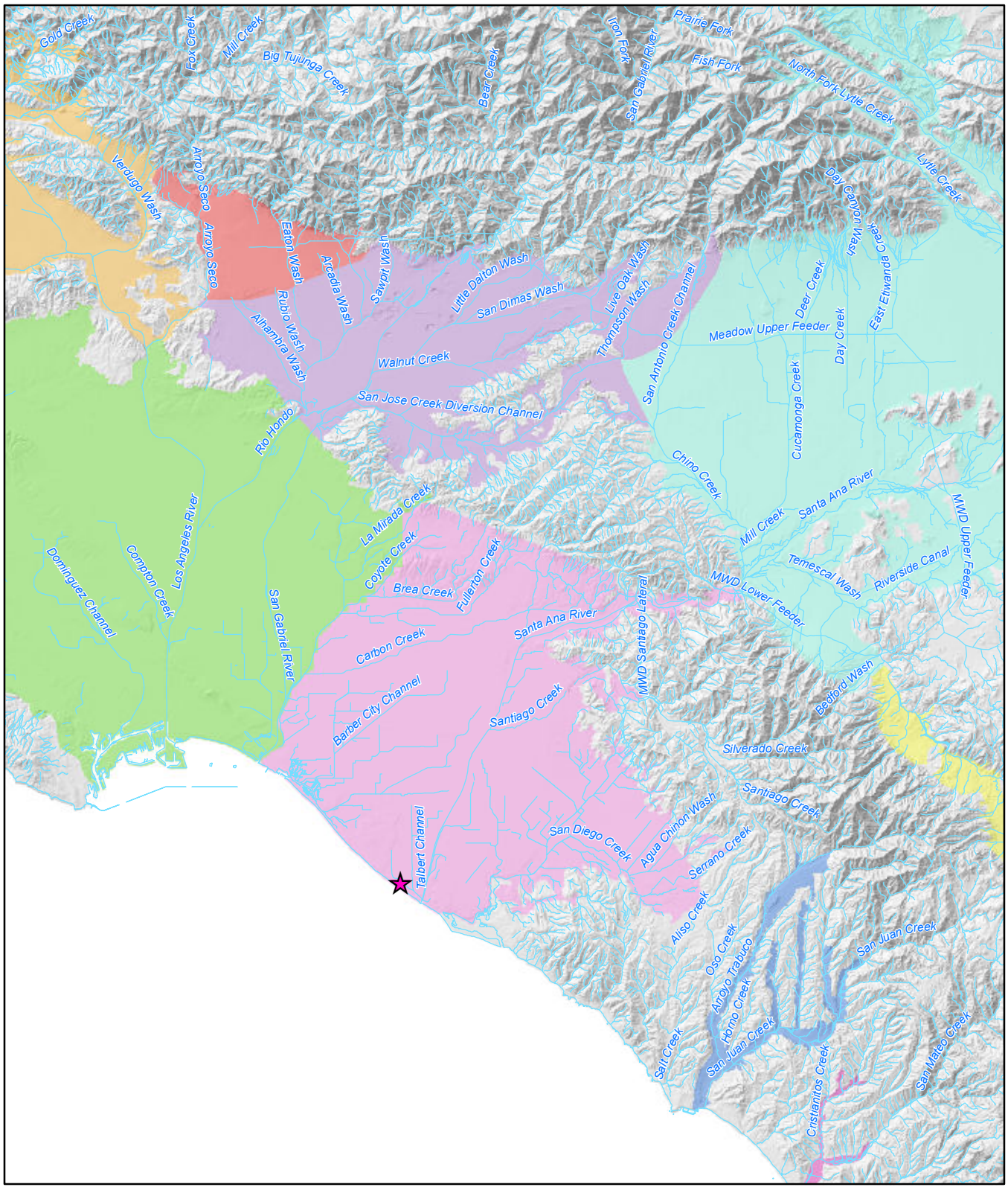
Source: DWR, 2004

5.15.1.3 Flooding Potential

The HBEP site is located outside the 100-year floodplain, in Zone X (shaded) as defined by the Federal Emergency Management Agency (FEMA), which means it is protected from the 1-percent annual chance or greater flood hazard by a levee system (FEMA, 2012; Figure 5.15-3).

Tsunamis are seismically induced ocean waves with very long periods. Tsunamis may be manifested in the form of wave bores or a gradual upwelling of sea level and can be caused by landslides or earthquakes. The offshore area of Orange County area contains many faults and fault scarps capable of producing tsunamis; however, seismically induced sea waves are uncommon or rare. The project site is located in a State of California Tsunami Inundation Area mapped for susceptibility run-up hazard. Tsunamis are relatively uncommon hazards in California. In the historic past, seven tsunamis have been recorded in California. In southern California, a significant tsunami was associated with the 1960 Chile Earthquake. Damage occurred in the Long Beach-Los Angeles harbor, where 5-foot-high waves surged back and forth in channels, causing damage to small boats and yachts. Tsunami tidal surge occurred in the Long Beach Harbor due to the magnitude 8.8 Chile Earthquake in February 2010, and minor effects were reported in the Long Beach Harbor due to the March 2011 Japan Tsunami.

Seiches are defined as oscillations in confined or semi-confined bodies of water due to earthquake shaking. In the general project area, seiches may be caused by tsunamis that are captured and reflected within the enclosed area of an inner harbor. Because of the coastal project location (that is, open ocean and no enclosed bay or harbor that affects the project site), there is no project risk associated with seiches.



Legend

- AES Huntington Beach Energy Project

Groundwater Basin

- Coastal Plain of Los Angeles
- Coastal Plain of Orange County
- Elsinore
- Raymond
- San Fernando Valley
- San Gabriel Valley
- San Juan Valley
- San Mateo Valley
- San Onofre Valley
- Upper Santa Ana Valley
- Water Features

0 4 8 Miles

Source: DWR (2004).

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FIGURE 5.15-2
Groundwater Basins

AES Huntington Beach Energy Project
Huntington Beach, California

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5.15.1.4 Water Supply

This section describes the quantity of water required, the sources of the water supply, and water quality of the source water.

5.15.1.4.1 Process Water

HBEP will use potable water provided by the City of Huntington Beach for process water. Process water will be used for the generator turbine wash, evaporative cooling blowdown makeup, water treatment, and other purposes. The project will access this water through an existing 8-inch-diameter City of Huntington Beach potable water line serving the existing Huntington Beach Generating Station. The City of Huntington Beach has provided a will-serve letter (Appendix 5.15A) indicating there is sufficient supply of potable water to accommodate the HBEP. The potable water that will be provided to the HBEP for use as process water and domestic water is currently allocated for industrial use at the existing Huntington Beach Generating Station. The existing Huntington Beach Generating Station uses more portable water than is proposed for the HBEP, which will result in a net reduction of potable water use and a beneficial impact on potable water supply. Information about the feasibility of other water supply sources is presented in Section 6.4. As noted in Section 6.4, alternative water sources, including the potential use of reclaimed water, to support the HBEP were analyzed and determined to be infeasible.

In 2010, the City of Huntington Beach's water supply consisted of 62 percent local groundwater and 38 percent imported surface water (Huntington Beach Utilities Division, 2011). In addition, the City has emergency water connections with the adjacent cities of Fountain Valley, Seal Beach, and Westminster (Huntington Beach Utilities Division, 2011). Table 5.15-4 shows the expected water quality of the HBEP domestic source water from the City of Huntington Beach.

TABLE 5.15-4
Expected Water Quality from City of Huntington Beach

Parameter	Units	MCL	Range of Detections	MCL Violation
Aluminum	mg/L	1	ND – 0.23	No
Arsenic	µg/L	10	ND – 2.8	No
Barium	mg/L	1	ND – 0.12	No
Fluoride naturally-occurring	mg/L	2	0.32 - 0.46	No
Nitrate (NO_3)	mg/L	45	ND – 3.4	No
Nitrate as Nitrite as N	mg/L	10	ND – 0.8	No
Chloride	mg/L	500*	13 - 147	No
Color	color units	15*	ND – 13	No
Odor	odor units	3*	ND – 16	No
Specific Conductance	µmho/cm	1,600*	359 - 1,000	No
Sulfate	mg/L	500*	28 – 240	No
Total Dissolved Solids	mg/L	1,000*	232 - 610	No
Turbidity	NTU	5*	ND – 0.2	No
Alkalinity, total	mg/L as $CaCO_3$	Not Regulated	67 – 199	NA
Boron	µg/L	Not Regulated	ND – 130	NA
Calcium	mg/L	Not Regulated	24 – 95	NA
Hardness, total	grains/gal	Not Regulated	4 – 18	NA
Hardness, total	mg/L	Not Regulated	67 – 307	NA
Magnesium	mg/L	Not Regulated	1.7 – 28	NA
pH	pH units	Not Regulated	7.5 – 8.3	NA
Potassium	mg/L	Not Regulated	1.7 – 4.8	NA
Sodium	mg/L	Not Regulated	33 – 95	NA
Total Organic Carbon	mg/L	Not Regulated	ND – 2.3	NA

TABLE 5.15-4
Expected Water Quality from City of Huntington Beach

Parameter	Units	MCL	Range of Detections	MCL Violation
Alpha Radiation	pCi/L	15	ND – 9.3	No
Beta Radiation	pCi/L	50	ND – 6.4	No
Uranium	pCi/L	20	1.5 – 8.0	No

* = Contaminant is regulated as a secondary standard
µg/L = micrograms per liter
µmho/cm = micromhos per centimeter
MCL = maximum contaminant level
mg/L = milligrams per liter
NA = not applicable
ND = not detected/detectable
NTU = nephelometric turbidity units
pCi/L = picocuries per liter
ppb = parts per billion
ppm = parts per million

Source: Huntington Beach Utilities Division, 2011

Figures 2.1-5a and 2.1-5b provide the water balances for HBEP representing two operating conditions. Figure 2.1-5a shows the HBEP operations under site monthly maximum average ambient temperature (SMMAAT) conditions with the combustion turbine generators (CTG) at 100 percent load with CTG inlet air evaporative cooling operating. For the SMMAAT conditions, HBEP water use will be approximately 94 gpm or approximately 115 acre-feet per year (assuming 6,665 hours of operation, at the average maximum daily temperatures), as shown in Table 5.15-5. Figure 2.1-5b represents HBEP operations at site peak summer ambient temperature (SPSAT) conditions with the CTGs operating at 100 percent load with CTG inlet evaporative cooling operating. Under SPSAT conditions (110°F dry bulb temperature and 7 percent relative humidity) with both CTGs operating at 100 percent load and CTG inlet evaporative cooling, water use will be approximately 190 gpm.

The HBEP makeup water will be fed directly from the City service line into the 442,500-gallon service water/fire water storage tank. Water from the fire/service water tank will be used as plant service water, irrigation water, makeup water to the combustion turbine inlet air evaporative coolers, and raw water feed to the steam cycle makeup water treatment system. The fire/service water storage tank will provide backup water supply of approximately 35 hours of operational storage and 2 hours of fire protection storage in the event of a disruption in the supply.

TABLE 15.5-5
Estimated Daily and Annual Water Use for HBEP Operations

Water Use	Average Daily Use Rate (gpm)	Maximum Daily Use Rate (gpm)	Average Annual Use* (acre-feet per year)
Potable water	94	190	115

*Assumes 6,665 hours of operation, at the average maximum daily temp.

5.15.1.4.2 Domestic and Sanitary Water Use

Potable water for domestic and sanitary use will be provided by the City of Huntington Beach from the existing, onsite 8-inch water pipeline that currently serves the facility. A will-serve letter from the City of Huntington Beach is included as Appendix 15.5A. The potable water that will be provided to the HBEP for domestic and sanitary use was previously allocated for industrial use at the Huntington Beach Generating Station.

The HBEP will employ a staff of 33 in three rotating shifts. As a result, a minimal amount of potable water will be used for sanitary use, drinking, eye wash, and safety showers, as well as fire protection water (less than 1 gpm, as needed).

Legend

AE The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.

X Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.

AES Huntington Beach Generating Station

AES Huntington Beach Energy Project

0 250 500 Feet

Source: FEMA (2009)

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FIGURE 5.15-3
FEMA Floodplains
AES Huntington Beach Energy Project
Huntington Beach, California

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5.15.1.5 Wastewater Collection, Treatment, Discharge, and Disposal

Process wastewater from the HBEP will be discharged to the existing Huntington Beach Generating Station outfall (existing National Pollutant Discharge Elimination System [NPDES] Permit No. CA0001163), which discharges to the Pacific Ocean. Figures 2.1-5a and 2.1-5b provide the water balances for the HBEP representing two operating conditions. For the SMMAAT conditions (Figure 2.1-5a), discharge to the outfall would be approximately 29 gpm or approximately 11.6 million gallons per year (assuming 6,665 hours of operation, at the average maximum daily temperatures), as shown in Table 5.15-6. The existing Huntington Beach Generating Station currently discharges approximately 98 billion gallons per year. For the SPSAT conditions (Figure 2.1-5b), discharge to the outfall would be approximately 160 gpm. Table 5.15-7 lists the expected process wastewater quality from the HBEP outfall.

TABLE 5.15-6
Estimated Daily and Annual Wastewater Discharge for HBEP Operations

Wastewater Use	Average Daily Discharge Rate (gpm)	Maximum Daily Discharge Rate (gpm)	Average Annual Discharge* (million gallons per year)
Wastewater to outfall	29	161	11.6

*Assumes 6,665 hours of operation at the average daily maximum temperature.

TABLE 5.15-7
Expected HBEP Wastewater Quality for SMMAAT Conditions

Parameter	Units	Outfall Value
Calcium (Ca)	mg/L as Ca	166.661
Magnesium (Mg)	mg/L as Mg	48.372
Sodium (Na)	mg/L as Na	201.200
Potassium (K)	mg/L as K	9.756
Total Alkalinity	mg/L as $CaCO_3$	357.710
Chloride (Cl)	mg/L as Cl	196.472
Sulfate (SO_4)	mg/L as SO_4	382.100
Nitrate (NO_3)	mg/L as NO_3	2.710
Nitrite (NO_2)	mg/L as N	0.542
Silica (SiO_2)	mg/L as SiO_2	40.310
Phosphorous (P)	mg/L as P	2.429
Phosphate (PO_4)	mg/L as PO_4	7.361
Conductivity	µmho/cm	2070.385
Total Organic Carbon (TOC)	mg/L	3.387
Total Dissolved Solids (TDS)	mg/L	1243.857
Aluminum (Al)	µg/L as Al	0.461
Arsenic (As)	µg/L as As	5.826
Barium (Ba)	µg/L as Ba	0.285
Boron (B)	µg/L	325.191
Fluoride (F)	mg/L	2.168
Vanadium (V)	µg/L	8.130
Total Hardness	mg/L as $CaCO_3$	609.734

TABLE 5.15-7
Expected HBEP Wastewater Quality for SMMAAT Conditions

Parameter	Units	Outfall Value
Alpha Radiation	pCi/L	15.176
Beta Radiation	pCi/L	11.653
Uranium	pCi/L	9.756

Source: HBEP SMMAAT Water Quality Table, 1/20/12, unpublished data

$CaCO_3$ = calcium carbonate
µg/L = micrograms per liter
µmho/cm = micromhos per centimeter
mg/L = milligrams per liter
pCi/L = picocuries per liter

General HBEP plant drains will collect containment area washdown, sample drains, and drainage from facility equipment drains. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and will be routed to the process drain collection system. Water from drains that potentially could contain oil or grease will first be routed through an oil/water separator. Wastewater streams that are unlikely to contain oil and grease, including CTG inlet air evaporative cooler blowdown, HRSG blowdown, auxiliary cooling system evaporative fluid cooler blowdown, and reverse osmosis (RO) reject will bypass the oil/water separator. Miscellaneous wastewaters, including those from combustion turbine water washes and from some water treatment membrane-based system's cleaning operations, will be collected in holding tanks or sumps and will be trucked offsite for disposal at an approved wastewater disposal facility. Information about the feasibility of other wastewater disposal options is presented in Section 6.7.6. As noted in Section 6.7.6, alternatives were analyzed and determined to be infeasible.

Sanitary wastewater will be discharged to the City of Huntington Beach sewer system, which generally discharges to larger Orange County Sanitation District facilities, via an existing 4-inch-diameter sanitary sewer force main located in the north corner of the site near Newland Road. Figures 2.1-5a and 2.1-5b provide the water balances for the HBEP, representing the two operating conditions. Under both conditions (SMMAAT and SPSAT), discharge to the City of Huntington Beach sewer would be approximately 0.16 gpm. A will-serve letter from the City of Huntington Beach indicating there is sufficient capacity to receive sanitary wastewater from the HBEP is included in Appendix 5.15B.

5.15.1.6 Stormwater

During construction and operation, the existing stormwater collection system will be used to collect and process stormwater from the site. Stormwater that falls within process equipment containment areas will be collected and discharged to the existing Huntington Beach Generating Station process drain system, which consists of oil/water separation sumps and two retention basins. Stormwater that falls within the plant-wide pavement areas and outside the process equipment containment areas will be routed to the retention basin. A small portion of stormwater may fall outside of the process containment and pavement areas and will either percolate directly into the soil or drain over the surface into the retention basins to assist with the removal of suspended solids. The oil-free stormwater from the process areas and from the pavement areas collected in the retention basins will be discharged to the Pacific Ocean via an existing outfall. The residual oil containing sludge will be collected via vacuum truck and disposed of as hazardous waste. Appendix 5.15C contains the preliminary grading and drainage plans.

5.15.1.7 Construction

As discussed in Section 5.15.1, the construction of the HBEP will require the removal of existing Huntington Beach Generating Station Units (1, 2, and 5) during the construction process. The demolition of Unit 5, scheduled to occur between the fourth quarter of 2014 and the end of 2015, provides the space for the construction of HBEP Block 1. Construction of Blocks 1 and 2 are each expected to take approximately 42 and 30 months, respectively,

with Block 1 construction scheduled to occur between the first quarter of 2015 through the second quarter of 2018, and Block 2 construction scheduled to occur between the first quarter of 2018 through second quarter of 2020. Removal/ demolition of existing Huntington Beach Generating Station Units 1 and 2 is scheduled to occur between the fourth quarter of 2020 through the third quarter of 2022.

Existing Huntington Beach Generating Station Units 3 and 4 were licensed through the CEC (00-AFC-13C) and demolition of these units is authorized under that license. Therefore, demolition of existing Huntington Beach Generating Station Units 3 and 4 is not part of the HBEP project definition. However, to ensure a comprehensive review of potential project impacts, the demolition of existing Huntington Beach Generating Station Units 3 and 4 is included in the cumulative impact assessment. Removal/demolition of existing Huntington Beach Generating Station Units 3 and 4 is scheduled to occur between the third quarter of 2015 and the second quarter of 2017 in advance of the construction of HBEP Block 2.

As discussed in Section 5.15.1, HBEP construction will require both onsite and offsite laydown and construction parking areas. A total of approximately 22 acres of construction laydown will be required, with approximately 6 acres at the Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the AGS used for construction laydown (component storage only; no assembly of components at AGS). During construction of the HBEP, these large components will be hauled from the construction laydown area at the AGS to the HBEP site as needed.

During construction of the project, water will be required primarily for dust suppression. Construction activities would require a relatively limited amount of water. Average daily use of potable water is expected to be about 18,000 gallons during the construction period. The construction water supply will be potable water from the City of Huntington Beach. During the 60-day plant commissioning period, when activities such as hydrostatic testing, cleaning and flushing and steam blows of the HRSGs and steam cycles will be conducted, average water usage is estimated at 24,000 gallons per day with a maximum daily use of 130,000 gallons.

5.15.2 Environmental Analysis

Project effects on water resources can be evaluated relative to significance criteria derived from the California Environmental Quality Act (CEQA) Appendix G checklist. Under CEQA, a project is considered to have a potentially significant effect on water resources if it would:

- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which will result in substantial erosion or siltation on- or offsite, or in flooding on- or offsite.
- Create or contribute runoff water which will exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff.
- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there will be a net deficit in aquifer volume or a lowering of the local groundwater table level (for example, the production rate of pre-existing nearby wells will drop to a level which will not support existing land uses or planned uses for which permits have been granted).
- Place within a 100-year flood hazard area structures that will impede or redirect flood flows.
- Cause inundation by seiche, tsunami, or mudflow.

5.15.2.1 Construction Impacts

5.15.2.1.1 Drainage

HBEP general site grading will establish a working surface for construction and plant operating areas, and will provide positive drainage from buildings and structures. The HBEP site grading and drainage will be designed to

comply with all applicable LORS. During construction, approximately 25.63 acres of land will be disturbed. HBEP construction will require both onsite and offsite laydown and construction parking areas. Approximately 22 acres of construction laydown will be required, with approximately 6 acres at the Huntington Beach Generating Station used for a combination of laydown and construction parking, and 16 acres at the AGS used for construction laydown (component storage only; no assembly of components at AGS). During HBEP construction the large components will be hauled from the construction laydown area at the AGS site to the HBEP site as they are required for installation.

Surface water impacts are anticipated to be related primarily to short-term construction activity and would consist of increased turbidity due to erosion of newly excavated or placed soils. However, compliance with engineering and construction specifications, and following approved grading and drainage plans will effectively mitigate these short-term impacts. Furthermore, as required under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ (Construction General Permit), a Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the construction site and will include best management practices (BMPs) for erosion and sediment control. The SWPPP will be prepared prior to construction of the HBEP to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the construction site to offsite areas. Construction of the HBEP is not expected to increase the amount of impervious surfaces onsite because the project will replace the existing Huntington Beach Generating Station. Implementation of the SWPPP and BMPs, described in Section 5.15.4, will ensure that construction impacts to drainage are mitigated to a less-than-significant level.

Impacts on soil resources during HBEP construction and demolition can include increased soil erosion. Soil erosion causes the loss of topsoil and can increase the sediment load in surface water bodies near the construction site. The magnitude, extent, and duration of construction-related impacts depend on the erodibility of the soil; the proximity of the construction activity to the receiving water; and the construction methods, duration, and season.

Because conditions that could lead to excessive soil erosion via water are not present at the HBEP site, relatively little soil erosion from rain events is expected during the construction period. Additionally, construction BMPs will be implemented during HBEP construction and demolition in accordance with a site-specific SWPPP that is required under the Clean Water Act (CWA) for all construction projects over 1 acre in size. The CEC also requires project owners to develop and implement a drainage, erosion, and sediment control plan (DESCP) to reduce the impact of runoff from the construction site. Monitoring will involve inspections to ensure that the BMPs described in the SWPPP and DESCP are properly implemented and effective. Therefore, any potential impacts from soil erosion via water are expected to be less than significant.

It is expected that the offsite and onsite construction laydown areas, and the offsite construction/demolition worker parking areas that are not already graveled or paved will be covered by gravel or paving immediately after site preparation to prevent subsequent wind erosion losses.

5.15.2.1.2 Water Quality

Potential water quality impacts due to HBEP construction include impacts to surface water runoff during excavation and construction. In addition, construction materials could contaminate runoff or groundwater if not properly stored and used. Such construction impacts will be less than significant with implementation of a SWPPP and associated BMPs, including practicing proper housekeeping at the construction site. As noted previously, a SWPPP is required pursuant to the Construction General Permit for any project resulting in one or more acres of soil disturbance. SWPPP procedures include submitting a Notice of Intent (NOI) to the Santa Ana RWQCB and developing the SWPPP prior to the start of construction activities.

Water used for dust control and soil compaction during HBEP construction will not result in discharge because only a minimal amount of water will be used for this purpose. Therefore, no impact to water quality would occur as a result of dust control and soil compaction during construction. During the construction period, sanitary waste will be collected in portable toilets supplied by a licensed contractor for collection and disposal at an appropriate receiving facility resulting in no onsite discharge. Equipment wash water will be collected and disposed of offsite.

With the implementation of the SWPPP and BMPs described in Section 5.15.4, construction effects on water quality will be less than significant.

5.15.2.2 Operational Impacts

5.15.2.2.1 Drainage

The project site is currently developed with many impervious surfaces. Stormwater runoff from the site will be captured by the existing stormwater drainage system, which includes a retention pond, and discharged to the ocean via the existing outfall. Because stormwater would be collected and discharged via the existing stormwater drainage system and outfall, the HBEP would not result in substantial erosion, siltation, or flooding on- or offsite. Therefore, operational impacts to drainage patterns are less than significant.

5.15.2.2.2 Water Quality/Waste Discharge Requirements

HBEP operation would change the volume and chemical composition of waste discharges at the existing ocean outfall. The project implementation would result in an interim condition where once-through cooling at the existing Huntington Beach Generating Station is decreased by roughly one-half combined with the discharge of HBEP Block 1, and an ultimate condition with no once-through cooling and the discharge of both HBEP Blocks 1 and Block 2 to the ocean. On April 4, 2012, the Applicant discussed HBEP phased implementation with staff from the Santa Ana RWQCB (see Appendix 5.15D). It was determined that a new waste discharge permit would be required for HBEP. The Project Owner will apply for a new NPDES permit for HBEP prior to the start of construction. Draft permit applications for both the federal NPDES permit and state waste discharge requirements—both administered by the Santa Ana RWQCB—have been completed (see Appendix 5.15E). These applications will be filed with the Santa Ana RWQCB to ensure that permits are issued prior to the planned start of construction in 2015.

HBEP would have overall beneficial effects with regard to ceasing once-through cooling operations. In accordance with the May 4, 2010, SWRCB's Resolution No. 2010-0020 (Resolution) and adoption of a Policy for the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Plan), AES Southland, LLC (AES-SL) submitted an Implementation Plan to comply with California's Once-Through-Cooling (OTC) policy (OTC Policy) at the Huntington Beach Generating Station on April 1, 2011 and submitted a Revision to the Implementation Plan on June 16, 2011. It is expected that the Implementation Plan will be revised as appropriate to reflect changes in projected schedules of operation of the once-through-cooled generating units at the Huntington Beach Generating Station, or as requested by the SWRCB. Adverse effects associated with the existing intake of ocean water for cooling (discussed in Section 5.2.3.3.2, Biological Resources) and from the discharge would be reduced to roughly one-half in 2018, and to zero in 2020. Water quality effects associated with the existing discharge are primarily related to temperature – HBEP would reduce thermal impacts to zero. The use of any ocean water for cooling for HBEP will be consistent with Track 1 of the OTC Policy, whereby the intake flow rate must be reduced by 93 percent from the intake design rate of an existing unit and the intake velocity is equal to or less than 0.5 foot per second.

HBEP water quality impacts are described below in the context of the existing Order No. R8-2006-0011 (NPDES No. CA0001163)[2] for the existing Huntington Beach Generating Station (see Appendix 5.15F).

- **Ocean Temperature:** Waste discharge flows associated with ocean cooling is comprised primarily of once-through condenser cooling water (permitted discharge flow of 507 million gallons per day [mgd]), but also includes discharges from periodic activities to maintain the cooling system (for example, bio-fouling control, heat treatment). Once-through cooling discharges would fall to zero upon the full HBEP buildout, and all water quality impacts associated with ocean temperature would be eliminated.

[2] The permit renewal processes for all power generating facilities using once-through cooling have been consolidated by the SWRCB – renewals are being considered at the state level consistent with SWRCB Resolution No. 2010-0020 (Policy on Use of Coastal and Estuarine Waters for Power Plant Cooling). The applicant submitted a permit renewal application in January 2011, which is pending with the SWRCB.

- **Industrial Waste Discharges:** Discharges from plant industrial processes would continue to occur as shown in Figures 2.1-6a and 2.1-6b (water balance diagrams for average and peak conditions). However, industrial discharge flows would decrease because of decreased plant water use. Permitted average discharge flows are 0.2 mgd, whereas the HBEP discharges would average 0.04 mgd (29 gpm). Permitted peak discharge flows are 0.52 mgd, whereas the maximum HBEP discharges would be 0.23 mgd (160.6 gpm). The water source for the plant operation would be drinking (potable) water from the City of Huntington Beach. Industrial process flow consists of combustion turbine inlet evaporative cooling water blowdown and RO concentrate. The evaporative combustion turbine inlet cooling blowdown water makes up about 54 percent of the discharge and the water quality (constituent concentrations) is similar to potable water. Approximately 46 percent of the industrial discharge is RO concentrate from treatment of potable water. Combining these flow streams results in expected constituent concentrations of approximately 2.7 times that of the potable water source. These concentrations at the outfall are expected to be within the overall effluent limitations of the 2009 California Ocean Plan (Water Quality Objectives). Additionally, the constituent masses would be less because potable source water use would be reduced.
- **Stormwater Discharges:** Stormwater discharges would continue from the site similar to existing conditions (as described previously). SWPPP implementation (including monitoring and reporting) would continue pursuant to the existing permit. The SWPPP would include a suite of good housekeeping requirements including steps to identify and mitigate pollutants and conditions of concern, and a suite of BMPs to address material loading and storage areas; spill and leak prevention; waste handling; and employee training. Improvements in stormwater pollution control technology at the time of construction may contribute to improved stormwater discharge quality compared to the current stormwater system.

Sanitary wastewater will be discharged to the City of Huntington Beach's sewer system at a rate of 0.16 gpm, and transported to an Orange County Sanitation District facility. The HBEP sanitary discharge will be equivalent to or less than the volume of sanitary wastewater discharged from the existing Huntington Beach Generating Station. A will-serve letter from the City of Huntington Beach indicating there is sufficient capacity to receive sanitary wastewater from the HBEP is included in Appendix 15.5B. As a result, the HBEP would not violate any waste discharge requirements nor result in impacts to water quality.

For these reasons, operational impacts to surface water quality are less than significant.

5.15.2.2.3 Groundwater

The HBEP would make no direct use of groundwater resources and would have no effect on groundwater quantity or quality.

5.15.2.2.4 Flooding Potential

The HBEP site is not located within the 100-year floodplain as defined by FEMA because the HBEP site is protected from the 1-percent annual chance or greater flood hazard by a levee system. Project implementation will not result in any structures that will impede or redirect flood flows, nor cause inundation by seiche, tsunami, or mudflow, and therefore no impacts will occur.

Because the HBEP site location is in an area mapped as susceptible to tsunami run-up hazards, the potential for tsunami run-up hazard at the project site and possible mitigation techniques will be evaluated during the detailed design phase of the project.

5.15.3 Cumulative Effects

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code §21083; California Code of Regulations, Title 14, §15064(h), 15065I, 15130, and 15355).

Cumulative water quality impacts would occur from HBEP operation combined with the operation of the proposed Poseidon desalination facility – both projects would use the existing Huntington Beach Generating

Station's ocean discharge pipeline. The Poseidon desalination facility discharges are expected to begin in the near future, prior to HBEP operation. HBEP water quality impacts described previously are generally beneficial compared to the existing OTC system, with discharges limited to an average of 0.04 mgd (29 gpm). HBEP discharges would be dwarfed by the much larger discharges from the Poseidon desalination facility, which would discharge an average of 56.59 mgd (over 1,400 times more discharge volume than HBEP). Poseidon desalination facility discharges would consist primarily of concentrated seawater, and also would include filter backwash and rinse water from the RO process. Because the ocean water desalination process creates potable water by removing salts and other impurities, the waste discharge stream is highly concentrated with salt and other constituent concentrations higher than background ocean levels. Any potential HBEP water quality impacts would be diluted by the Poseidon desalination facility, which would be a beneficial cumulative effect. HBEP discharges would be too small to have any effect (beneficial or adverse) on Poseidon desalination facility discharges.

The existing Huntington Beach Generating Station Units 3 and 4 were licensed through the CEC (00-AFC-13C) and demolition of these units is authorized under that license. Therefore, demolition of existing Huntington Beach Generating Station Units 3 and 4 is not part of the HBEP definition. However, there is an overlap between construction activities related to both projects, which could result in a cumulative effect. As required under the Construction General Permit, a SWPPP will be prepared for both projects and will include BMPs for erosion and sediment control. Implementation of the SWPPP and BMPs will prevent the offsite migration of sediment and other pollutants and reduce runoff from the construction site to offsite areas. Therefore, HBEP would be very unlikely to cause cumulative impacts when its effects are considered in combination with those of other projects.

HBEP would have little or no adverse impact on sanitary waste discharge capacity, flooding potential, or groundwater resources. Therefore, the project would be very unlikely to cause cumulative impacts when its effects are considered in combination with those of other projects.

5.15.4 Mitigation Measures

This section presents mitigation measures proposed to reduce HBEP's impacts to water resources. This mitigation measure is prescribed by stormwater and erosion control management programs mandated under the NPDES permitting system to do the following:

- Implement BMPs designed to minimize soil erosion and sediment transport during construction of the HBEP in compliance with the statewide General Construction Permit. Design appropriate erosion and sediment controls for slopes, catch basins, culverts, stream channels, and other areas prone to erosion.

This program has been in place for a number of years and the prescribed measures have proven effective. Under the General Construction Permit, various specific measures are prescribed and a monitoring program is required. Compliance with this program should ensure that residual impacts associated with the HBEP are mitigated to a less-than-significant level. As part of the General Construction Permit, prior to construction and operation, the HBEP will be required to develop a construction SWPPP to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the project site to offsite areas.

5.15.5 Laws, Ordinances, Regulations, and Standards

Federal and state LORS applicable to water resources and anticipated compliance are discussed in this section and summarized in Table 5.15-8. No local LORS for water resources are applicable.

TABLE 5.15-8
Laws, Ordinances, Regulations, and Standards for Water Resources

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
Clean Water Act/Water Pollution Control Act. P.L. 92-500, 1972; amended by Water Quality Act of 1987, P.L. 100-4 (33 USC §466 et seq.); NPDES (CWA, Section 402)	Prohibits discharge of pollutants to receiving waters unless the discharge is in compliance with an NPDES permit. Applies to all point-source discharges, including stormwater runoff from construction (including demolition).	Santa Ana RWQCB	Compliance with existing statewide NPDES permits for construction stormwater (Section 5.15.5.2) New NPDES permit for continued industrial and stormwater discharges to the existing ocean outfall (Section 5.15.5.2)
State			
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to surface water and groundwater of California.	Santa Ana RWQCB	Compliance with existing statewide NPDES permits for construction stormwater (Section 5.15.5.2) New NPDES permit for continued industrial and stormwater discharges to the existing ocean outfall (Section 5.15.5.2)
California State Constitution, Article X, Section 2	Prohibits waste or unreasonable use of water.	SWRCB	The HBEP will use potable water for plant processes (see Section 6.0, Alternatives, Section 6.6.3)
California Water Code, Section 13550	States that use of potable water for non-potable purposes is an unreasonable use of water.	SWRCB	The HBEP will use potable water for plant processes (see Section 6.0, Alternatives, Section 6.6.3)
State Water Board Resolution 75-58	Encourages use of wastewater for power plant cooling.	SWRCB	The HBEP will use potable water for plant processes (see Section 6.0, Alternatives, Section 6.6.3)
State Water Board Resolution 2010-0020	Established standards to implement federal Clean Water Act, Section 316(b), which requires that the location, design, construction, and capacity of cooling intake structures reflect the best technology available for minimizing adverse environmental impact.	SWRCB	Compliance with State Water Board Resolution 2010-0020, Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling through an existing Implementation Plan (Section 5.15.5.2.2).

5.15.5.1 Federal LORS

In California, discharges of wastewater and stormwater into surface waters are regulated by the SWRCB and RWQCBs under the Clean Water Act and the Porter-Cologne Water Quality Control Act. Relevant NPDES permits for stormwater quality management are discussed below under state LORS.

5.15.5.2 State LORS

5.15.5.2.1 California Ocean Plan

The SWRCB formulates and adopts a water quality control plan for California ocean waters. The 2009 California Ocean Plan regulates waste discharges, effluent discharges, and discharge locations (SWRCB, 2009a). The plan sets specific narrative and numeric water quality objectives for bacteriological, physical, and chemical characteristics. The plan applies to both point and nonpoint sources discharges. The water quality objectives from

the 2009 Ocean Plan (or as updated) will be met by HBEP, which will be demonstrated when a new NPDES permit is approved prior to the planned start of construction in 2015.

5.15.5.2.2 Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling

The SWRCB established technology based standards to implement federal Clean Water Act, Section 316(b), which requires that the location, design, construction, and capacity of cooling intake structures reflect the best technology available for minimizing adverse environmental impact. An Implementation Plan has been submitted by AES for the existing Huntington Beach Generating Station that meets these requirements (Revised Plan June 16, 2011).

5.15.5.2.3 Construction Stormwater NPDES Permit

The federal Clean Water Act effectively prohibits discharges of stormwater from construction sites unless the discharge is in compliance with an NPDES permit. The SWRCB is the permitting authority in California and has adopted a statewide General Permit for Stormwater Discharges Associated with Construction Activity (SWRCB Order 2009-0009-DWQ) that applies to projects resulting in 1 acre or more of soil disturbance (SWRCB, 2009b). The proposed project would result in disturbance of more than 1 acre of soil. Therefore, the project will require the preparation of a construction SWPPP that would specify site management activities to be implemented during site development. These management activities will include construction stormwater BMPs, dewatering runoff controls, and construction equipment decontamination. The Santa Ana RWQCB requires an NOI to be filed prior to any stormwater discharge from construction activities, and that the SWPPP be implemented and maintained onsite. A Construction Drainage Erosion and Sediment Control Plan/SWPPP will be completed prior to the beginning of construction activities.

5.15.6 Agency Contacts, Permits, and Permit Schedule

Agency contacts and required permits are listed in Table 5.15-9.

TABLE 5.15-9
Agency Contacts, Permits, and Permit Schedule for Water Resources

Permit	Agency Contact	Schedule
National Pollution Discharge Elimination System (NPDES)	Gary Stewart Santa Ana RWQCB 3737 Main Street, Suite 500 Riverside, CA 92501-3339 (951) 782-4379	A new NPDES permit is expected prior to the planned start of construction in 2015
National Pollution Discharge Elimination System Construction Activities Stormwater General Permit	Not applicable (submit online using Stormwater Multiple Application and Report Tracking System [SMARTS]) Michael Kashak Santa Ana RWQCB 3737 Main Street, Suite 500 Riverside, CA 92501-3339 (951) 782-4469	Submit NOI for coverage under the Permit at least 30 days prior to construction
Statewide Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling	Joanna Jensen SWRCB, Division of Water Quality 1001 I Street Sacramento, CA 95814 jjensen@waterboard.ca.gov	Implementation Plan has been submitted for the existing Huntington Beach Generating Station that meets these requirements. (Revised Plan June 16, 2011)

5.15.7 References

California Department of Water Resources (DWR). 1967. *Progress Report on Ground Water Geology of the Coastal Plain of Orange County*.

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Santa Ana Regional Water Quality Control Board. 2006. Order No. R8-2006-0011. Permit No. CA0001163.

Santa Ana Regional Water Quality Control Board. 2008. *Water Quality Control Plan for the Santa Ana River Basin*. Updated February 2008.

Santa Ana Watershed Project Authority. 2012. *Santa Ana River Watershed*. Online Information: www.sawpa.org/watershedinfo.html

State Water Resources Control Board (SWRCB). 1997. National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit) Water Quality Order No. 97-03-DWQ Waste Discharge Requirements (WDRs) for Discharge of Stormwater Associated with Industrial Activities Excluding Construction Activities.

State Water Resources Control Board (SWRCB). 2009a. *California Ocean Plan 2009 – Water Quality Control Plan Ocean Waters of California*.

State Water Resources Control Board (SWRCB). 2009b. National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction Activity (General Permit) Water Quality Order 2009-0009-DWQ.

State Water Resources Control Board (SWRCB). 2010. *Approved 2010 Clean Water Act Section 303(d) List of Water Quality Limited Segments*. U.S. Environmental Protection Agency approval date: November 12, 2010. http://maps.waterboards.ca.gov/webmap/303d/files/2010_USEPA_approv_303d_List_Final_122311wsrcs.xls