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7.14 WATER RESOURCES

This section evaluates the effects of the project on water resources in the area of the Willow Pass Generating Station (WPGS) site. The project will use recycled water supplied by Delta Diablo Sanitation District Wastewater Treatment Plant (DDSD WTP). Plant wastewater and sanitary wastewater will be discharged back to DDSD WTP.

The WPGS consists of two Siemens Flex Plant 10 (FP10) units operating in combined-cycle mode. Mirant Willow Pass, LLC (Mirant Willow Pass) will develop the WPGS on approximately 26 acres of the Pittsburg Power Plant (PPP) site of Mirant Delta, LLC (Mirant Delta) that is currently occupied by existing retired power generation Units 1 through 4, an administration building, one unused #6 fuel oil tank, an unused surface impoundment, temporary buildings, and other ancillary facilities (see Figure 7.14-1). The WPGS site is located in the City of Pittsburg and is surrounded by Suisun Bay to the north, the PPP to the east and west, and the Pacific Gas and Electric Company (PG&E) switchyard to the south.

The project includes a new water supply pipeline and a new wastewater discharge pipelines constructed between the WPGS site and the DDSD WTP. Each pipeline will be approximately 5 miles long. Three miles of the 5-mile-long route currently contains an unused fuel oil pipeline owned by Mirant Delta, which historically was used to convey oil between the Contra Costa Power Plant and the PPP. The existing pipeline is 10.75 inches in diameter, is now out of service, and will be replaced by the new water pipelines. The water pipeline alignment runs through the PPP site, crosses under Willow Pass Road/West 10th Street and Burlington Northern Santa Fe Railroad, then turns east and runs adjacent to the Union Pacific Railroad. The alignment crosses beneath railroad tracks in several locations (consistent with the location of the existing unused fuel oil pipeline). The east section of the water pipeline alignment crosses under Pittsburg-Antioch Highway, runs along the north side of the Highway, and continues north on Arcy Lane to the DDSD WTP.

The new WPGS facility will have a new makeup water supply system, fire protection loop, potable water supply system, process wastewater discharge system, and sanitary wastewater system.

Temporary construction laydown and parking areas will all be located within the PPP site and the adjacent PG&E switchyard property. Most of the 26-acre WPGS site will be cut and filled to an approximate elevation of 8 to 13 feet above mean sea level, from an existing elevation of approximately 7 to 9 feet. A portion of the WPGS site, containing an unused surface impoundment in the northeast corner, will not be graded and will be left in place. A second unused surface impoundment located west of Tank 1 (not on the WPGS site) will be demolished; this area will be used for construction parking and laydown. A series of five screening walls will be constructed on the PPP site between existing Tanks 1 through 6; the tanks and associated containment structures will remain intact.

The aspects of water resources that could potentially be affected by the project include water supply, water quality, and flood hazards. The California Environmental Quality Act Guidelines and applicable laws, ordinances, regulations, and standards (LORS) define significance criteria for compliance in each of these areas. The impacts of the project on beneficial water uses are expected to be less than significant.

7.14.1 Affected Environment

This section describes the environment relative to water resource features in the vicinity of the WPGS.

7.14.1.1 Groundwater

Groundwater Features

The PPP site is located within the Pittsburg Plain Groundwater basin, along the south shore of Suisun Bay. The groundwater basin has a surface area of approximately 18 square miles and extends from the foothills south of the project area to the San Joaquin River in the north. It is bounded by the Tracy basin on the east and the Clayton basin on the west (DWR, 2004). The water-bearing units in the basin are Pleistocene to Recent age alluvium deposits that have a maximum thickness of 400 feet. Aquifers in the basin area are hydrologically connected to the San Joaquin and Sacramento Rivers (DWR, 2004). Data from Department of Water Resources (DWR) wells indicate that groundwater levels within the Pittsburg Plain Groundwater basin have remained fairly stable over the period of record, with the exception of lowered levels and subsequent recovery during significant drought periods (e.g., 1976-1977 and 1987-1992) (DWR, 2004).

There are two groundwater zones identified beneath the PPP site. These are a shallow perched groundwater zone and a deeper zone referred to as the Upper Aquifer (CDM, 1997). The perched zone is localized and occurs within a peat and clay deposit. Groundwater in this zone can be encountered near the surface (approximately 0.5 foot below ground surface [bgs]). The Upper Aquifer occurs within a sand and gravel deposit that ranges in thickness from approximately 26 to 50 feet. Depth to groundwater in this zone generally ranges from 7 to 10.5 feet bgs (CDM, 1997). The groundwater flow direction is generally north towards the bay, with the hydraulic gradient ranging from approximately 0.004 foot per foot to 0.092 foot per foot (Fletcher Consultants, Inc., 2004). Groundwater in these two shallow zones does not appear to be in direct communication or associated with the regional Pittsburg Plain Groundwater Basin (Fluor Daniel GTI, 1998).

As part of previous groundwater monitoring programs, 14 groundwater monitoring wells have been installed on the PPP site, with three installed within the perched groundwater zone and the remaining 11 wells installed within the Upper Aquifer. Four monitoring wells are within the portion of the area that will be regraded, specifically near the unused surface impoundment west of Tank 1 that will be removed (Fletcher Consultants, Inc., 2004).

Groundwater Quality

The groundwater quality in the Pittsburg basin is generally poor due to chlorides, total dissolved solids (TDS), and agricultural runoff. High chloride concentrations are not generally considered a health hazard, but the U.S. Environmental Protection Agency (U.S. EPA) has recommended a limit of 250 parts per million (ppm) for drinking water due to taste preferences (Bertoldi et al., 1991).

The City of Pittsburg uses groundwater from the alluvium and blends it with water from the Contra Costa Canal. This is primarily due to high levels of naturally occurring TDS in the groundwater. The secondary drinking water TDS standard is 1,000 ppm, but less than 500 ppm is generally recommended (CCWD, 2006). TDS in groundwater near the site is generally between 500 and 1,500 milligrams per liter (mg/L) (Planert and Williams, 1995). These TDS levels tend to increase with depth and are due to the lithology of the area. The City of Pittsburg historically operated two wells, which are located approximately 1.5 miles south of the PPP site (see Figure 7.14-1). The average daily withdrawal of each well is approximately 2 million gallons per day (mgd) (McDonald, 2007). Due to high TDS at the easternmost well, the City of Pittsburg plans to discontinue use of the well and has installed a new well further to the west closer to the other existing well. TDS at the two western wells ranges from approximately 450 to 750 mg/L (City of Pittsburg, 2006), with higher concentrations measured at deeper levels. These wells are screened between 100 and 200 feet bgs.

As discussed in Section 7.13, Waste Management; and Appendix R, Phase I Environmental Site Assessment, the potential exists for groundwater contamination to be present beneath the WPGS site due to historical operations (Fluor Daniel GTI, 1998). Potential contaminants include petroleum hydrocarbons, volatile organic compounds, metals, polynuclear aromatic compounds, and polychlorinated biphenyls.

Groundwater Beneficial Uses

Groundwater in the area of the site is used primarily for industrial and agricultural uses. As discussed above, the City of Pittsburg has a few municipal wells located approximately 1.5 miles south of the PPP site. Due to high TDS levels in the groundwater, the City of Pittsburg blends the groundwater with water from the Contra Costa Canal.

7.14.1.2 Surface Water

Surface Water Features

The WPGS site will be situated along the southern shore of Suisun Bay just downstream of New York Slough and south of Chipps Island (Figure 7.14-1). Suisun Bay is the only natural perennial surface water feature within 1 mile of the site. The WPGS site is on the southern bank of the bay, approximately 2 miles west from the center of the City of Pittsburg in Contra Costa County, and approximately 7 miles downstream from the existing Contra Costa Power Plant. Willow Creek is located approximately 1,000 feet west of the western border of the 26-acre WPGS site (Figure 7.14-1). There are no surface water bodies present on the WPGS site, although there is an unused surface impoundment at the northeast corner of the WPGS site. This surface impoundment will remain in place and will not be demolished. Another unused surface impoundment is located immediately north of retired Units 1 through 4, west of Tank 1. This surface impoundment is not on the WPGS site, but is located on a construction laydown and parking area. This surface impoundment will be demolished as part of the project. Both surface impoundments were cleaned and closed in 2004, as acknowledged by the Department of Toxic Substances Control's closure certification letter dated April 28, 2005 (DTSC, 2005). For more information regarding these surface impoundments, see Section 7.13, Waste Management; and Appendix R, Phase I Environmental Site Assessment. A cooling water canal is also located within the PPP, west of the WPGS site.

Suisun Bay is part of the San Francisco Bay and the San Joaquin-Sacramento River Delta Estuary. It encompasses roughly 1,600 square miles, drains more than 40 percent of the land surface in the State of California, approximately 47 percent of the state's total runoff, and provides drinking water to approximately two-thirds of Californians (SFEP, 1999). Fresh water from the rivers and numerous smaller tributaries flows out through Suisun Bay to the Pacific Ocean. The San Francisco Bay Estuary (the Estuary) is composed of three distinct hydrographic regimes: the South Bay, which extends from the Bay Bridge to the southern terminus in San Jose, and the Central and North Bays, which connect the delta and the Pacific Ocean.

The North Bay consists of several small embayments, the two largest being San Pablo Bay and Suisun Bay. The embayments are connected to each other and the ocean by deep, narrow channels ranging from 42 feet deep in San Pablo Bay to more than 360 feet deep at the Golden Gate. San Pablo Bay is characterized by a deep channel surrounded by broad shoals. San Pablo Bay is connected to Suisun Bay by the narrow Carquinez Strait. Suisun Bay is a shallow basin consisting of braided channels and shallow shoals. The Central Bay has a highly complex bathymetry. East of the Golden Gate, the depth is approximately 300 feet, while extensive intertidal mudflats are present at the eastern edge of the Central Bay.

Freshwater inflows, tidal flows, and their interactions largely determine variations in the hydrology of the Estuary. Hydrology has profound effects on all species that live in the Estuary because it determines the salinity in different portions of the Estuary, and controls the circulation of water through the channels and bays.

Approximately 90 percent of the freshwater inflow to the North Bay comes from the delta (Cheng et al., 1993) and flows through the northern portion of the Bay, resulting in a partially- to well-mixed Estuary (Walters et al., 1985; Uncles and Peterson, 1995). The North Bay is hydrologically distinct from the Central and South Bays. The degree of mixing depends on seasonally varying river inflow. The timing and magnitude of the highly seasonal river inflow modulates permanent estuarine circulation, which is largely maintained by salinity-controlled density differences between river and ocean waters.

Currents in San Francisco Bay are dominated by tidal action. Tides in the bay are classified as mixed semidiurnal, with two flood tides and two ebb tides of unequal range occurring over a 24.8-hour period. Mean tidal range in Pittsburg is 3.0 feet. Flood tides flow at 160° and ebb at 320° relative to north.

The WPGS site is located within the Willow Creek Sub-basin, as described in the East Contra Costa County Habitat Conservation Plan Environmental Impact Statement. In general, all surface water runoff flows north to Suisun Bay (see Figure 7.14-1). Willow Creek is the primary surface water feature within this approximately 16,000-acre watershed (Jones & Stokes, 2006). Willow Creek and its tributaries are ephemeral streams that collect storm flows as well as irrigation return water and urban runoff. Portions of these creeks have been channelized or culverted. For the construction of the PPP's cooling water canal, Willow Creek was diverted from a general south to north alignment to its present configuration shown on Figure 7.14-3.

A portion of the water pipeline route between the WPGS site and the DDSD's facility will be within the Kirker Creek Sub-basin. Total drainage area of the Kirker Creek Sub-basin is approximately 9,500 acres (Jones & Stokes, 2006). While the upper portion of Kirker Creek is mostly ephemeral, flowing from November through April, some of the lower reaches of the creek are perennial due to artificial inputs such as irrigation return water and urban runoff. The lower reaches of the creek and its tributaries have been culverted, concreted, and redirected in reaches to accommodate residential and industrial uses. Originally, the creek flowed directly north. In the 1940s, the creek was diverted to bypass the U.S. Steel property such that the creek makes a 90-degree bend east at the Pittsburg-Antioch Highway, and then flows into New York Slough through two channels, i.e., Dowest Slough and Los Medanos Wasteway (Jones & Stokes, 2006).

The Contra Costa Canal is located approximately 2 miles south of the WPGS site (see Figure 7.14-1). The 48-mile-long canal is owned by the U.S. Bureau of Reclamation, but operated and maintained by Contra Costa Water District (CCWD). It begins at Rock Slough, near Oakley, California and generally runs from east to west. With the exception of the first 4 miles, the canal is concrete lined (CCWD, 2005). The primary purpose of the canal is to deliver drinking water from the Delta to treatment plants for distribution to customers. The City of Pittsburg receives raw water from the Contra Costa Canal, treats the water and then distributes the potable water to its customers. As discussed in Section 7.14.1.1, the City also supplements its water supply from the canal with groundwater from its own municipal wells. Table 7.14-1 summarizes the water quality of the City of Pittsburg's potable water supply.

The existing topography of the WPGS site is shown on Figure 2.6-1. Figure 7.14-3 shows the drainage pattern and discharge points for the existing PPP property in the vicinity of the WPGS. Stormwater runoff discharges from the PPP are permitted under the *National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001 (General Permit) Water Quality Order No. 97-03-DWQ Waste Discharge Requirements (WDR) for Discharge of Storm Water Associated with Industrial Activities*

Excluding Construction Activities and NPDES Permit Number CA0004880 for the PPP. Stormwater runoff from the northern portion of the 26-acre WPGS site currently collects and drains via a storm drain system and then discharges to the bay via the existing discharge Outfall 001. Stormwater runoff from the southern portion of the WPGS site is discharged via existing discharge Outfall 009, which discharges into Willow Creek and ultimately into Suisun Bay. The existing PPP has prepared a Storm Water Management Plan, which includes a Storm Water Pollution Prevention Plan (SWPPP) and a Monitoring and Reporting Program, in accordance with the permit requirements (Mirant, 2005).

The WPGS will be constructed within 26 acres of the PPP site which is currently covered with buildings, retired Units 1 through 4, and an unused #6 fuel oil storage tank. Other portions of the 26-acre site are either compacted soil or covered in asphalt pavement. The estimated percentage of existing impervious surfaces within the 26-acre site is approximately 95 percent (see Appendix F for preliminary drainage calculations).

Existing Surface Water Quality

The surface water quality of Suisun Bay in the vicinity of the WPGS site is variable due to its position near the estuarine transition zone that separates the upstream, freshwater delta from the downstream, saltwater bay. Near the site, Suisun Bay ranges from freshwater during periods of high river flow to brackish water during periods of lower flow.

The San Francisco Bay Basin Plan (SFRWQCB, 2007) gives water quality objectives for bacteria, chemical constituents from Title 22 CCR (arsenic, barium, boron, cadmium, copper, cyanide, iron, manganese, molybdenum, selenium, silver, and zinc), dissolved oxygen, radioactivity, taste and odor, and toxicity. The Plan notes that achieving these objectives do not require improvement over naturally occurring background concentrations (i.e., State Water Board Resolution No. 92-49).

Surface Water Beneficial Uses

Beneficial uses of Suisun Bay include industrial, commercial, and domestic uses as well as irrigation, recreation, and the preservation of wildlife. However, Suisun Bay is identified as being impaired for a variety of contaminants, including chlordane, DDT, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, nickel, polychlorinated biphenyls (PCBs), dioxin-like PCBs, and selenium (SFRWQCB, 2006). The Basin Plan does not specify beneficial uses for Willow Creek or Kirker Creek.

7.14.1.3 Climate and Precipitation

The climate in Pittsburg is generally characterized by warm, dry summers and mild, wet winters. Climate data for the nearby meteorological station in Antioch, California is summarized in Table 7.14-2. The mean daily maximum temperature is approximately 91 degrees Fahrenheit (°F) (for July), the mean daily minimum temperature is approximately 37°F (for December), and the mean annual temperature is approximately 61°F based on the period of record from March 1955 through March 2005. Temperature extremes range from 18°F, recorded on December 12, 1972, to 117°F, recorded on June 17, 1961. Average annual precipitation is approximately 13 inches, with more than 80 percent occurring between November and March. Based on data from nearby areas, average annual pan evaporation rates are expected to be approximately 70 to 80 inches per year. Evaporation from shallow ponds is expected to be approximately 70 to 80 percent of the pan evaporation rates (WRCC, 2005).

Based on the National Oceanic and Atmospheric Administration Atlas 2 (NOAA, 1973), the 25-year, 24-hour, and the 100-year, 24-hour rainfall amounts for the project site are approximately 3.25 inches and 3.7 inches, respectively.

7.14.1.4 Current and Proposed Water Use

The existing PPP consists of seven electrical generating units, including Units 1 through 4 which were last operated in 2003. These units will be demolished as part of the project. Units 5, 6, and 7 are in service and generate electricity to the grid.

The existing PPP Units 5, 6, and 7 withdraw water from Suisun Bay from two adjacent existing intake structures. The condenser cooling water is discharged back to the river via existing Outfall 001, which is located in the northeastern corner of the PPP property, in accordance with NPDES Permit No. CA 0004880 (SFRWQCB, 2002). Units 1 through 4 historically discharged process wastewater to Suisun Bay via Outfall 001; however, only low volume waste streams from the PPP, stormwater runoff and discharge from Units 5, 6, and 7 are currently discharged via this outfall. The WPGS will not withdraw from or discharge process water to Suisun Bay.

Since 2001, DDSD has been the provider for recycled water in the area. DDSD is responsible for treating and discharging treated wastewater for the cities of Antioch and Pittsburg and the unincorporated community of Bay Point in Contra Costa County. The DDSD WTP is located in Antioch, California and includes a Water Pollution Control Facility (WPCF) and a Recycled Water Facility (RWF). The cities own and maintain the collection systems that deliver untreated wastewater to DDSD's pumping stations, which is then conveyed to DDSD's WPCF. The WPCF has a capacity of 16.5 mgd and provides secondary treatment, disinfection and dechlorination prior to discharging the treated effluent to New York Slough (Brown and Caldwell, 2006). Discharges are permitted in accordance with DDSD's NPDES Permit No. CA 0038547, issued by the San Francisco Bay Region Regional Water Quality Control Board (SFRWQCB, 2004; SFRWQCB, 2003). The DDSD RWF receives non-chlorinated secondary effluent from the WPCF. The amount of WPCF effluent delivered to the RWF depends on the demands of the recycled water customers.

The two largest users of recycled water supplied by DDSD are the two Calpine power generating plants (Los Medanos Energy Center [LMEC] and Delta Energy Center [DEC]), which use recycled water for cooling purposes. Recycled water is also used to irrigate landscaping surrounding the RWF. The DEC is located immediately adjacent to the RWF. The LMEC is approximately 3 miles east of the RWF and receives recycled water via an underground pipeline. The RWF is currently sized to deliver a peak flow of 12.8 million mgd; however, average demand for the two power plants and landscape irrigation has been approximately 7 mgd with peak flows of up to 12 mgd occurring less than 10 percent of the year (Brown and Caldwell, 2006), which is consistent with peaking plant operations at DEC and LMEC. In addition, the City of Antioch has proposed to construct infrastructure to convey surplus recycled water from the RWF to irrigation users, such as the Lone Tree Golf Course in Antioch (RMC, 2006).

The project will use recycled water provided by DDSD (see Appendix I for Will-Serve Letter). The recycled water will require ammonia removal treatment at the WPGS site to remove the nutrient source for *nitrobacter* and *nitrosomonus* bacteria that would otherwise cause fouling and microbiologically influenced corrosion within the plant. A new offsite water line, approximately 5 miles long, will be constructed to bring recycled water from the DDSD RWF. A representative water analysis of the recycled water supply is summarized in Table 2.5-3. It is possible that some modifications, such as larger capacity filters, may be required by the DDSD to accommodate the supply for WPGS; however, all required upgrades would be mechanical in nature, would occur within the existing footprint of the DDSD WTP, and would not require additional land disturbance outside of the installation of the offsite linear pipelines from the WPGS to the DDSD WTP. The recycled water received from DDSD will be nitrified and then stored on the WPGS site in a 1.6-million-gallon Nitrified Water Storage Tank. This tank has sufficient capacity for 24 hours of operation at full load peak demand.

Daily and annual water consumptive requirements of the WPGS are summarized in Table 2.5-3 in Chapter 2. Average daily requirements are based on a plant operation scenario based on 75°F ambient temperature and 54 percent relative humidity. Maximum daily requirements are based on water consumption at maximum operating conditions of 94ºF and 32 percent relative humidity. Average and maximum daily conditions are based on combustion turbine inlet evaporative cooling and power augmentation in operation. The annual water consumption value is the estimated total amount of water that will be used by the facility, in acre-feet. The annual water use for the FP10 units assumes that the units will operate at an average annual capacity factor of approximately 40 to 50 percent.

The water balance diagram (Figure 2.5-6) shows the proposed WPGS water treatment processes and the distribution of treated water. Water treatment will vary according to the quality required for each of the plant's water uses: CTG inlet air evaporative coolers, power augmentation, heat recovery steam generator (HRSG) makeup water, and the service water system. Details about the plant's water uses are provided in Section 2.5.6. Briefly, the water uses for the Siemens Flex Plant 10 units include:

- Raw recycled water containing ammonia will be delivered to WPGS from DDSD's RWF. The recycled water will be processed through nitrification facilities to reduce ammonia to less than 0.3 mg/L. The nitrified water will then flow to the 1.6-million-gallon Nitrified Water Storage Tank.

- The nitrified water will serve as process makeup water for the entire plant. A portion of the raw water will be treated with corrosion inhibitor and used as makeup to the service water system.

- Water pre-treatment will consist of Reverse Osmosis (RO) prefilters, followed by first and second pass RO membranes. A portion of the first pass RO permeate will be blended with nitrified water for makeup to the evaporative coolers. This prevents aspiration of compounds that could foul or damage the combustion turbines and extends the life of the packing material used inside the evaporative coolers without adding chemicals.

- Feedwater will be produced for the HRSGs by further processing of second pass RO permeate using onsite electrodeionization membranes. Electrodeionization uses no chemicals.

- The following plant demineralized water uses are anticipated:

  – Demineralized water will be needed for power augmentation. The demineralized water will be used to produce steam in the HRSG for injection into the combustion turbines of the FP10 units during power augmentation operation.

  – Demineralized water will be needed for boiler feedwater makeup to maintain a constant quality and quantity of water within the system.

  – Demineralized water will also be used for miscellaneous plant uses, such as periodic combustion-turbine-compressor washes, makeup of various chemical feed, and cleaning solutions.

  Note: The FP10 combustion turbines will use dry ultra low NO_X burners; therefore, water injection for NO_x control will not be necessary.

- Demineralized product water will be stored in a 800,000-gallon demineralized water storage tank, which provides sufficient capacity for approximately 1 day of peak load operation coinciding with an outage of the water treatment system.

During construction, water will be supplied by the existing PPP water system, or by water trucks as necessary. Average daily use of construction water is estimated to be about 10,000 gallons. The maximum monthly water usage is estimated to be 1,250,000 gallons during the hydrotesting of the HRSGs and associated piping. Depending on the test or washing cycle, the water to be discharged may include some metals or detergents. The hydrotest water will be tested, and if its quality is suitable will be reused or discharged appropriately. If the water quality is not suitable for discharge, the water will be transported by truck to an approved offsite disposal facility.

Potable water will be provided by the City of Pittsburg. The project's use of potable water will include personal consumption, eyewash stations, showers, and sanitary needs and is estimated to be approximately 2 acre-feet per year (AFY).

7.14.1.5 Wastewater Discharge

Process wastewater from Mirant Delta's existing PPP Units 5, 6, and 7 is discharged to Suisun Bay in accordance with PPP's NPDES permit No. CA0004880. The WPGS will not discharge process wastewater to the bay. Sanitary wastewater from the PPP is discharged via the public sanitary sewer system to the DDSD WPCF.

The WPGS will have two separate wastewater collection systems. The first is the plant's process wastewater system, which collects wastewater from the CTG evaporative coolers and HRSGs, water treatment system, chemical feed area drains, and general plant drains. Clear process wastewater streams will be collected in the WPGS' wastewater storage tank. Streams containing suspended solids (nitrification filters and RO prefilters backwash) will be processed through a new settling basin. The clear supernatant from the settling basin will be combined with the effluent from the wastewater storage tank and then discharged into the new 10-inch-diameter pipeline. The sediments collected in the settling basin will be cleaned as needed and will be shipped offsite for disposal. From the wastewater storage tank, the process wastewater will be pumped and conveyed via the new 10-inch-diameter wastewater discharge pipeline to the DDSD WPCF. Discharge of process wastewater to DDSD will be covered under an agreement to be entered into with DDSD. The discharge limits in this agreement will be derived from DDSD's NPDES discharge requirements. The WPCF has a capacity of 16.5 mgd and provides secondary treatment, disinfection, and dechlorination prior to discharging the treated effluent to New York Slough. Discharges from the WPCF are permitted in accordance with DDSD's NPDES Permit No. CA 0038547, issued by the San Francisco Bay Region Regional Water Quality Control Board. The WPGS process wastewater will be conveyed directly to the DDSD WPCF's final effluent structure, where it will receive chlorination and de-chlorination treatment prior to discharge. The estimated composition of the WPGS wastewater stream is shown in Table 2.5-5.

The will-serve letter from DDSD states that DDSD has sufficient capacity to accept the wastewater discharge (see Appendix I). The water balance diagram on Figure 2.5-6 shows the WPGS process wastewater streams and the disposition of wastewater. Details about the wastewater associated with the WPGS are described in Section 2.5.7.

The second wastewater collection system is the sanitary system, which collects sanitary wastewater from sinks, toilets, and other sanitary facilities. Sanitary wastewater from the WPGS will be discharged via a separate sanitary discharge pipeline that will connect to the City of Pittsburg's sanitary collection and conveyance system and conveyed to the DDSD WPCF. Discharge of sanitary wastewater to DDSD will

be covered either by a new Industrial User's permit or by a new agreement between Mirant Willow Pass and DDSD.

To accommodate the proposed plant, approximately 23.5 acres of the 26-acre WPGS site will be graded. In addition, approximately 3.5 acres on the PPP site will be graded for temporary construction laydown and parking. The screening walls will be constructed between existing Tanks 1 through 6 in areas previously disturbed and graded. The proposed site drainage plan is shown on Figure 2.6-2. The existing retired power generation Units 1 through 4, an administration building, one unused #6 fuel oil storage tank, temporary buildings, an unused surface impoundment, and other ancillary facilities will be replaced with structures, pavement, or gravel. The amount of impervious area is currently 95 percent of the WPGS site, and subsequent to project construction, will be approximately 50 percent (see Preliminary Drainage Calculations in Appendix F). While the amount of impervious area may be less than existing conditions, compacting the soil to support the proposed facility would reduce the amount of infiltration that would occur during rain events. Overall, it is anticipated that there would be no increase in impervious area or runoff due to the project.

Portions of the WPGS process area site with the potential for stormwater contamination will be curbed and runoff from these areas will be contained and then conveyed to the project's new oil-water separator (OWS), with ultimate discharge to the wastewater discharge system (i.e., to DDSD). Stormwater runoff from the majority of the project site will continue to be collected by a surface drainage system and then discharged to Suisun Bay via Outfall 001 or Outfall 009, with runoff from portions of the site (e.g., parking areas) to be routed through the PPP's OWS prior to discharge to the bay. Preliminary drainage calculations are provided in Appendix F.

The only discharges to the bay associated with the WPGS would be stormwater runoff. Mirant Willow Pass will submit a Notice of Intent to comply with the General Permit for Industrial Activities. It will prepare a Stormwater Management Plan that includes a SWPPP and Monitoring and Reporting Plan, similar to the one for the existing PPP (Mirant, 2007), which would comply with the General Permit requirements.

7.14.1.6 Flooding

Suisun Bay forms the northern boundary of the site. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Numbers 0600330001E, 0600330002E, 0600330003E, and 0600330004E (FEMA, 2001), and 0600250115B and 0600250120B (FEMA, 1987) show that the site and sections of the pipeline route are within the designated 100-year floodplain (Figure 7.14-4). The elevation of the 100-year floodplain (referred to as the base flood elevation) in the vicinity of the site is 7 feet above msl (referenced to National Geodetic Vertical Datum of 1929). While the FIRMs that cover the plant site, which have an effective date of 1987, indicate that the site is within the FEMA designated 100-year floodplain, recent topographic survey data (March 2007) for the PPP site show that most of the WPGS site is above the base flood elevation (see Figure 2.6-1).

7.14.2 Environmental Consequences

To evaluate the environmental consequences of the project relative to water supply, water quality, and flood hazards, the following criteria were used to determine whether project-related impacts would be significant. Impacts would be considered significant if the project would affect:

- Groundwater
  - Substantially degrade groundwater quality.

- Surface Water
  - Substantially alter surface water chemistry or temperature;
  - Substantially alter the volume of water in a surface water body;
  - Contaminate a public water supply;
  - Substantially reduce the amount of water otherwise available for public water supplies;
  - Change currents or the course of direction of water movements in marine or fresh waters; or
  - Obstruct or alter any navigable water of the United States.

- Flood Hazard
  - Substantially increase the risk of flooding, erosion, or siltation; or
  - Change absorption rates, drainage patterns, or the rate and amount of surface runoff.

7.14.2.1 Groundwater

Construction, operation, and maintenance of the project will not use groundwater. However, construction, operation, or maintenance of the facility could potentially affect groundwater quality through inadvertent spills or discharge that could then infiltrate and percolate down to groundwater, as depth to groundwater at the site is relatively shallow (approximately 0.5 to 10.5 feet bgs). The project will implement spill prevention and control measures to prohibit discharge of chemicals to groundwater.

The four existing groundwater monitoring wells located near the unused surface impoundment within the 3.5-acre construction laydown area (which will be demolished as part of the project) will be capped and abandoned in accordance with Contra Costa County requirements and with the California DWR Bulletin 74-90, California Well Standards.

Pile driving will be used for foundation construction in lieu of deep excavations. In addition, trenching will be required to install the new gas lines and water pipeline alignment. Therefore, dewatering during construction may be required where excavation is below the groundwater table. To ensure proper disposal of dewatered groundwater, a dewatering plan will be developed prior to excavation. The plan will include requirements for water sampling, analysis, and analytical review. The plan will define discharge options based on volume, chemical analysis, and permit discharge limits. Prior to proceeding with discharge, all appropriate regulatory agencies will be consulted and/or notified and all required special conditions or permit variance conditions will be met. Therefore, no impacts to groundwater are anticipated.

7.14.2.2 Surface Water

The WPGS will use recycled water from DDSD for process water supply. The estimated average annual water use is approximately 781 AFY or approximately 0.7 mgd. Delivery to the project site will be via a new pipeline from the DDSD's RWF. Maximum daily use at the proposed plant is estimated to be approximately 1,120 gpm. The recycled water supply flows from DDSD follow a diurnal flow pattern typical of most wastewater collection and treatment systems. The WPGS will include a 1.6-million-gallon storage tank to equalize the flows needed for plant operations and provide storage to account for brief emergency upsets to the water supply delivery system. The RWF is equipped with generator backup; therefore, any power failures would be very brief (i.e., on the order of minutes). In addition, the

WPGS has the flexibility to curtail operations or turn off the power augmentation to reduce water consumption during extended upsets.

The will-serve letter from DDSD (see Appendix I) confirms that adequate water supply is available for the project. In addition, data from June through September 2006, summarized in Table 7.14-3, which are representative of peak generation demand months, demonstrate that sufficient quantities of recycled water would be available for the WPGS. The project's water usage would be less than 0.5 percent of the total wastewater inflow to the DDSD's WPCF. Current commitments for recycled water are described in Section 7.14.1.4; there are no conflicting commitments for this source. Therefore, the impact on water supply or other users of this source would be considered less than significant.

Process wastewater will be routed to the discharge end of DDSD's WPCF, and therefore, will meet the limits stipulated in DDSD's NPDES discharge permit. The will-serve letter confirms that DDSD is willing to accept the returned wastewater. The estimated composition of the WPGS wastewater is shown in Table 2.5-4. The wastewater composition assumes that the recycled water delivered to the WPGS will meet the requirements specified in an agreement with DDSD, similar to those developed for other power plants that use recycled water and return wastewater to the district. This agreement will stipulate the water quality requirements for the returned discharge. Therefore, there would be no adverse impact to DDSD's ability to meet its discharge water quality requirements.

The WPGS will use dry-cooling technology to limit water consumption. The project is making use of recycled water that would otherwise be discharged by DDSD. More than 60 percent of the recycled water delivered to the plant is consumed. Due to the project's use of recycled water, the benefits of a zero liquid discharge system are negligible.

Construction, operation, or maintenance of the project facility could affect surface water quality of Suisun Bay through inadvertent spills or discharges. Construction activities could also increase the potential for erosion and uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation. The existing topography and drainage system at the PPP in the vicinity of the 26-acre WPGS site are shown on Figure 2.6-1 and Figure 7.14-3, respectively. The preliminary site grading and drainage plans of the proposed facility after construction are shown on Figure 2.6-2. As discussed in Section 7.9, Soils, the City of Pittsburg's zoning code outlines requirements for building permits for new development projects including the submission and approval of a grading plan. Best management practices (BMPs) such as silt fences and fiber rolls will be used during construction to minimize the potential for erosion.

The new water supply and wastewater discharge pipelines between the DDSD WTP and the new WPGS plant will be installed in a trench using standard pipeline installation techniques and in accordance with the manufacturer's requirements for the installation of HDPE piping (see Figure 2.5-9). Topsoil will be removed and stored prior to excavation of the pipeline trench. Any portion of existing roads or pavement that must be removed in the trenching process will be disposed of offsite in an appropriate disposal area. Spoils from trenching will be stored alongside the trench. The pipe sections will be joined by fusion welding and laid in the trench on a sand base. To the extent possible, excavation spoils will be used for backfill. Where trenching spoils are not suitable, imported backfill will be used. Once backfilled, the surface will be repaved where applicable.

The new water pipelines will cross several creeks, roads, and railroad tracks. With the exception of the overhead crossing at Harbor Street, the pipelines will be placed underground. The construction of the water pipelines will require a construction disturbance corridor, including laydown and staging, of a maximum width of 15 feet. This may be reduced to a minimum of 5 feet to avoid environmental resources or minimize traffic disruption during construction adjacent to the Pittsburg-Antioch Highway.

The pipelines will be laid at an average depth of 5 feet. The offsite water pipelines will be constructed primarily using a cut-and-cover trenching method, except where the pipelines cross environmentally sensitive areas, such as creeks, or cross under existing railroad tracks. To minimize disturbance, a jack-and-bore method will be used at most creek crossings. This construction method, also known as auger boring, allows the pipeline to be constructed beneath streams, roads, railway tracks, and other obstacles without causing surface disturbance. This method requires the excavation of an entrance and exit pit at each end of the boring area. These pits would be located at least 100 feet from the stream channel to avoid disturbance to the stream bed or banks. Spoils will be reused as fill wherever possible. Additional BMPs, such as covering spoil piles when it is raining and keeping construction equipment and materials outside of the stream channels and banks, will be used during construction to minimize the potential for erosion and prevent sediments and contaminants from entering creeks.

Due to the large elevation difference between grade level and Kirker Creek at Arcy Lane, installation of the pipelines under the creek using jack-and-bore methods is not feasible. At this location, the pipes would be installed and buried under the creek through a 4-foot-wide open-cut trench. BMPs will include silt fences, fiber rolls, or other measures to prevent sediment or construction debris from entering the creek or being discharged to the nearby wetlands. If construction will result in temporary disturbance to an area greater than 0.1 acre, or if endangered species consultation is required, the applicant will submit a pre-construction notification to the U.S. Army Corps of Engineers, obtain a Streambed Alteration Agreement from the California Department of Fish and Game, and obtain a water quality certification from the Regional Water Quality Control Board (see Section 7.2 for additional discussion).

The potable water supply pipeline, sanitary wastewater pipeline, and gas pipeline will be installed in trenches. Standard pipeline installation techniques will be used. Spoils from trenching will be stored alongside the trench. The pipe sections will be joined by fusion welding and laid in the trench on a sand base. To the extent possible, excavation spoils will be used for backfill. Where trenching spoils are not suitable, imported backfill will be used. Once backfilled, the surface will be either paved or covered with compacted soil and/or gravel.

Dewatering during construction may be required where excavation is below the groundwater table. To ensure proper disposal of dewatered groundwater, a dewatering plan will be developed prior to excavation. The plan will include requirements for water sampling, analysis, and analytical review. The plan will define discharge options based on volume, chemical analysis, and permit discharge limits. Prior to proceeding with discharge, all appropriate regulatory agencies will be consulted and/or notified and all required special conditions or permit variance conditions will be met.

A construction SWPPP will be prepared and implemented in accordance with the General Permit for Construction Activities. In addition, the project will comply with the City of Pittsburg requirements related to stormwater management and soil erosion control. BMPs will be similar to those developed by the Contra Costa County Clean Water Program, which the City of Pittsburg implements, for stormwater management BMPs related to earthmoving activities. With the project as designed and implementation of the mitigation measures proposed in Section 7.14.4.2, the impacts to surface water quality would be less than significant.

Stormwater runoff from open areas will be discharged to Suisun Bay via the existing PPP stormwater Outfalls E001 and E009 in accordance with NPDES General Industrial Permit requirements. Stormwater from the new parking lot will be directed to the existing PPP OWS and then directed to the existing Outfall E001.

Stormwater runoff from areas that collect miscible chemicals or volatile liquids and from areas that could collect nonmiscible oil will be directed to a new OWS system. Oil leakage from equipment is expected to

be minimal. Nonetheless, all equipment that has potential for leakage of oil or hazardous chemicals will be located within spill containment areas. The oil from the oil containment chambers of the OWS will be collected and shipped off site for recycling. After passing through the OWS, water from the clear effluent chambers will be discharged to the wastewater storage tank, combined with the process wastewater and then conveyed via the new 10-inch-diameter process wastewater discharge pipeline to the DDSD WTP final effluent structure.

A Stormwater Management Plan, which includes an SWPPP for operations and associated Monitoring and Reporting Program, will be prepared in accordance with the NPDES Industrial General Permit requirements and will include BMPs to protect water resources. BMPs similar to those established for the PPP will be implemented as part of the project. The Stormwater Management Plan will be consistent with the City of Pittsburg's requirements for a Stormwater Management Plan. Therefore, the project would have no significant impacts to surface water quality.

The WPGS will only discharge stormwater to Suisun Bay and therefore will not alter river currents or direction of water flow, nor will it obstruct or alter navigable waters because there will be no construction in Suisun Bay.

The project will use a small amount of potable water (approximately 2 AFY). This water will be supplied by the City of Pittsburg. This is a very small amount of water compared to the overall water usage within the City's service area. The estimated average annual water usage for 2003 and 2004 was approximately 10,100 AFY (CCWD, 2005). The addition of the 20 personnel associated with the operation of the WPGS will not create significant additional demands on the potable water supply. Therefore, the project will have no significant impacts to potable water supplies in the area.

7.14.2.3 Flooding

Development of the project, which includes buildings, structures, and impermeable surfaces, could reduce the amount of stormwater that infiltrates into the ground and could increase the amount of water that runs off the site. However, the WPGS would be constructed on areas that are already impervious (retired units and tank, and pavement); therefore, there would be no significant change in impervious surfaces as a result of the project. Furthermore, the majority of the project site will be covered with gravel, rather than pavement. As such, the amount of stormwater runoff from the 26-acre site would be approximately the same or less than under existing conditions. The majority of the stormwater runoff will be collected in the plant site area using catch basins and conveyed via a storm drain system and discharged to the river via existing Outfall 001. Since this outfall was originally designed to accommodate stormwater runoff from the PPP as well as process wastewater discharge from the now retired PPP Units 1 through 4, there is more than sufficient capacity at the outfall. Therefore, the project's impact on runoff volume and resulting increase in downstream flooding is considered less than significant.

The WPGS will be elevated above the 100-year floodplain. The plant site will be graded, as shown on Figure 2.6-2, to promote drainage to prevent onsite flooding and minimize the potential for flooding to neighboring areas. Nevertheless, the facilities will be at an elevation of approximately 8 to 13 feet above msl. Therefore, all of the facilities will be above the 100-year flood elevation and would not be subject to flooding.

Most of the water supply/discharge pipeline will be buried, and therefore the pipelines will not affect any of the floodplains that are crossed. Elevated sections (e.g., at Harbor Street) will be well above the floodplain elevation.

Grading and construction will be performed in accordance with the City's grading standards and floodplain management regulations (City of Pittsburg Municipal Code Title 15, Chapters 15.80 and 15.88). No significant impacts related to flooding are expected as a result of the project.

7.14.3 Cumulative Impacts

Past, current, and potential future projects, including the WPGS project, would require a water supply. Impacts on water supply could be considered cumulatively significant due to the scarcity of water in the region. The project will use a relatively small amount of recycled water (approximately 781 AFY), which would have a negligible effect on surface water availability in the region. The project will use recycled water from DDSD for process water needs. A small amount of City of Pittsburg water will be used for potable water (approximately 2 AFY). Therefore, the project would not contribute to a cumulatively significant impact to potable water supplies, and cumulative impacts of the project would be less than significant.

7.14.4 Mitigation Measures

This section discusses mitigation measures proposed by the applicant that will be implemented to ensure that project-related impacts to water resources are less than significant.

7.14.4.1 Groundwater

WR-1 Dewatering During Construction

As discussed in Section 7.14.2.1 (Water Resources; Groundwater), dewatering may be required during installation of pipelines or foundations due to the presence of relatively shallow groundwater. As discussed in Section 7.13, Waste Management, and Appendix R, Phase I Environmental Site Assessment, there are areas of potential soil contamination on the project site and along the gas line route. Soil and groundwater may be contaminated beneath Units 1 through 4 and the fuel storage tank, as described Appendix R. In addition, contaminated soils and groundwater may be encountered during construction of the water supply and wastewater discharge pipelines between the project site and the DDSD WTP.

At least 60 days prior to the start of construction, the applicant will prepare a work plan that details the procedures that will be used to address any contaminated groundwater, should it be encountered during construction. This work plan will identify how the applicant will address any adverse impacts and the mitigation measures to be used to render them less than significant.

7.14.4.2 Surface Water

WR-2 Construction Best Management Practices

As discussed in Section 7.9.1.4, Soil Loss and Erosion, impacts to surface water from erosion are expected to be minimal during construction. Erosion will be controlled in accordance with an approved Erosion Control Plan as discussed in Section 7.9.2.2, Construction. In addition, all construction activities will be performed in accordance with the California NPDES General Permit for Stormwater Discharge Associated with Construction Activities (SWRCB, 1999), requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities.

Temporary BMPs are discussed in Section 7.9.3.1, Temporary Erosion Control Measures, and may include slope stabilization, construction of berms and ditches, and sediment barriers such

as fiber rolls or silt fences to prevent sediment discharges from the site. Jack-and-bore techniques will be used to install the water supply and wastewater discharge pipes at most of the creek crossings to avoid disturbance to the creeks. Where open-cut trench methods are required at creek crossings near wetlands or other environmentally sensitive areas, appropriate BMPs will be implemented. These measures will be developed and described for the construction activities in a Construction SWPPP that will be prepared before construction begins. With proper implementation of BMPs, no significant impacts to surface water quality are anticipated during short-term construction activities. In addition, use of existing infrastructure will minimize physical impacts from construction activities. No significant impacts to surface water are anticipated as a result of construction activities.

WR-3 Project Operation Best Management Practices

Permanent erosion control measures are discussed in Section 7.9.3.4, Permanent Erosion Control Measures, and include drainage systems and gravel or paved surfaces. Operation of the facility will be in conformance with the California NPDES General Permit for Stormwater Discharge Associated with Industrial Activities (SWRCB, 1997). In accordance with this permit, an industrial SWPPP will be prepared for the project that will be similar to the SWPPP for the existing PPP. BMPs for the project would be similar to the BMPs currently being implemented to control pollutants in stormwater discharges for the PPP. BMPs will include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from stormwater exposure, and preparing and implementing spill contingency plans in specified areas. With proper implementation of these and other BMPs in the SWPPP, no significant impacts to surface water quality are anticipated during the long-term operation of the facility.

7.14.5 Laws, Ordinances, Regulations, and Standards

The primary agency for regulating surface water and groundwater pollution in California is the RWQCB. The State Water Resources Control Board (SWRCB) delegates authority for implementation of regulations to RWQCB but creates general policies and plans. The SWRCB and RWQCB are agencies within the California Environmental Protection Agency. The federal agencies (e.g., U.S. EPA) have delegated most authority on water pollution issues to the state. Consequently, the RWQCB determines allowable concentration limits for effluents, issues permits, and enforces the regulations.

Local water districts, water suppliers, and health departments may also act when a pollutant has the potential to threaten their drinking water supply. Effluent limitations, and toxic and effluent standards are established pursuant to Sections 301, 302, 303(d), 304, 307, and 316 of the Clean Water Act.

The SFRWQCB's *San Francisco Bay Water Quality Control Plan* outlines general water quality goals for Suisun Bay. Industrial service supply water and industrial process water supply are identified as beneficial uses (SFRWQCB, 2007)

The project will operate in accordance with all applicable LORS. The LORS that are potentially applicable to the water resources components of this project are identified below. Project conformance with the LORS is summarized in Table 7.14-4.

7.14.5.1 Federal

The Clean Water Act of 1977 (including 1987 amendments) §402; 33 USC §1342; 40 CFR Parts 122-136

Administering Agency: RWQCBs

Compliance: In lieu of an NPDES Permit, the project will use Notices of Intent to comply with the general NPDES requirements that regulate stormwater and other discharges to water by establishing effluent limitations and monitoring and reporting requirements, as described in Section 7.14.6.

The Clean Water Act of 1977 (including 1987 amendments) §404 and §401

Administering Agency: USACE and U.S. EPA

Compliance: Placement of fill materials into waters of the United States is regulated by Section 404 of the CWA, which is administered by USACE and U.S. EPA. Under the CWA, the RWQCB must issue Section 401 Water Quality Certification for a project to be permitted under Section 404. Water quality certification requires the evaluation of water quality considerations associated with dredging or placement of fill materials into waters of the United States. At most of the creek crossings along the pipeline route, pipe will be installed using jack-and-bore techniques. However, an open-cut trench method will be used at creek crossings where jack-and-bore is not feasible. As such, the project will obtain a water quality certification as described in Section 7.2.4.1.

7.14.5.2 State

California Porter-Cologne Water Quality Control Act of 1998; California Water Code §13000-14957; Division 7, Water Quality

Administering Agency: SWRCB, RWQCB

Compliance: There will be no discharge of waste to land, such as septic seepage pits or leach fields. The project will discharge all sanitary wastewater to the public sanitation district.

California Water Code § 13260

Administering Agency: RWQCB

The project will discharge sanitary wastewater into a public sewer system.

California Water Code § 13550 et seq.

Administering Agency: SWRCB; RWQCB

Compliance: Requires use of recycled water where available and appropriate. The SWRCB also adopted Resolution 75-58, which encourages the use of wastewater for power plant cooling and establishes the following order of preference for cooling purposes:

1. Wastewater discharged to the ocean
2. Ocean water
3. Brackish water or irrigation return flow
4. Inland wastewater with low TDS
5. Other inland water

The project will use air cooling technology that will limit the amount of water used by the plant. The project will also use recycled water as its source of process water.

California Water Code §13271-13272; 23 CCR §2250-2260

Administering Agency: RWQCB; California Office of Emergency Services

Compliance: Requires filing a report of release of specified reportable quantities of hazardous substances, including oil and petroleum products, when the release is into or will likely discharge into waters of the state.

California Constitution, Article 10 §2

Administering Agency: SWRCB

Compliance: Prohibits waste or unreasonable use of water. The project will use recycled water from DDSD and dry-cooling technology to limit water consumption.

The California Safe Drinking Water and Toxics Enforcement Act (California Health and Safety Code 25249.5 et seq.)

Administering Agency: RWQCB

Compliance: Prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The project will not discharge untreated wastewater to surface water.

7.14.5.3 Local

Contra Costa County General Plan (Contra Costa County, 2005b)

Administering Agency: Contra Costa County

Compliance: Encourage conservation of water resources (Goal 7-H); Protect the natural resources associated with creeks and the delta, and their riparian zones (Goal 7-O); Protect creeks and riparian zones from damage caused by development activity (Goal 7-P); Employ drainage improvements that increase retention capacity (Goal 7-Q); (Goal 8-W); Encourage the development of detention basins and erosion control structures to reduce peak storm water flows (Policy 7-38); Require onsite water control so that no significant increase in peak flows occurs compared to the site's pre-development condition (Policy 7-45); (Policy 8-87); Conserve and manage water resources and protect their quality (Goal 8-T); Maintain the ecology and hydrology of creeks, while preventing flooding and erosion (Goal 8-V); Preserve the quality of surface and groundwater resources (Policy 8-75); Provide setback areas along natural creeks (Policy 8-89); Conduct grading, filling and construction activity near watercourses in a manner so as to minimize impacts from increased runoff, erosion, and sedimentation (Policy 8-91); and Limit development within the 100-year floodplain (Policy 10-34).

Contra Costa County Clean Water Program (Contra Costa County, 1999)

Administering Agency: Contra Costa County

Compliance: Incorporate BMPs to reduce or eliminate the discharge of pollutants in stormwater runoff. Stormwater runoff from process areas will be directed to an OWS prior to discharge to DDSD stormwater runoff from WPGS parking areas will be routed to the PPP OWS prior to discharge to Suisun Bay.

Contra Costa County Zoning Ordinance Title 4, Chapter 420 Sewage (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: No septic system will be associated with the project. All sanitary wastewater will be discharged to the local sanitation district.

Contra Costa County Zoning Ordinance Title 8, Chapter 82-26 Water Conservation Landscaping (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: Incorporate water-conserving landscapes into the project.

Contra Costa County Zoning Ordinance Title 8, Chapter 82-28 Floodplain Management (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: No housing will be constructed within the floodplain. Plant facilities will be constructed above the base flood elevation.

Contra Costa County Zoning Ordinance Title 8, Chapter 82-30 Dual Water Systems (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: Incorporate dual water systems by using recycled water from DDSD for process water and potable water from City of Pittsburg for potable uses.

Contra Costa County Zoning Ordinance Title 10, Chapter 1010 Drainage (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: Control erosion and sedimentation. Prevent discharge of pollutants into watercourses.

Contra Costa County Zoning Ordinance Title 10, Chapter 1014 Storm Water Management and Discharge Control (Contra Costa County, 2005a)

Administering Agency: Contra Costa County

Compliance: Incorporate BMPs to protect water quality and to reduce stormwater runoff rates and volumes. There will be no increase in stormwater runoff because the amount of impervious surfaces associated with the project would be approximately the same or less than under existing conditions.

City of Pittsburg General Plan (City of Pittsburg, 2004)

Administering Agency: City of Pittsburg

Compliance: Minimize runoff and erosion by earth movement by requiring the use of BMPs (Goal 9-G-4); Preserve and enhance Pittsburg's creeks for their value in providing visual amenity, drainage capacity, and habitat value (Goal 9-G-5); Require evaluation and implementation of appropriate measures for creek bank stabilization and BMPs to reduce erosion and sedimentation while encouraging preservation of natural creeks and riparian habitat (Policy 9-P-15); Establish development standards for new construction adjacent

to riparian zones to reduce sedimentation and flooding including the requirement of the construction of berms or protective fences between construction and riparian zones and the requirement to install storm sewers prior to construction (Policy 9-P-16); Require an assessment of downstream drainage (channels and creeks) and City storm-water facilities impacted by potential runoff (Policy 9-P-21); Comply with RWQCB regulations and standards to maintain and improve the quality of both surface water and groundwater resources (Goal 9-G-7); Ensure that soil and groundwater pollution is addressed in during redevelopment and reuse projects (Goal 9-G-8); Require urban development to use BMPs to minimize creek instability, runoff of construction sediment, and flooding (Policy 9-P-23); Reduce sedimentation and erosion of waterways by minimizing site disturbance and vegetation removal along creek corridors (Policy 9-P-24).

The proposed project will comply with these goals and policies.

City of Pittsburg General Plan (City of Pittsburg, 2004)

Administering Agency: City of Pittsburg

Compliance: Locate development outside flood-prone areas unless mitigation of flood risk is assured (Goal 10-G-7); Ensure that new development mitigates impacts to the City's storm drainage capacity from storm water runoff in excess of runoff occurring from the property in its undeveloped state (Goal 10-G-8); Ensure drainage improvements or other mitigations of the project's impacts on the storm drain system appropriate to the project's share of the cumulative effect (Policy 10-P-18); Assure through the Master Drainage Plan and development ordinances that proposed new development adequately provides for on-site and downstream mitigation of potential flood hazards (Policy 10-P-19); Ensure that pad elevations on newly constructed habitable buildings are one foot above the 100-year flood plain as determined by FEMA (Policy 10-P-22); Ensure that all new development contributes to the construction of drainage improvements in the Kirker Creek and other watersheds in the Planning Area, as required by the City's adopted ordinances (Policy 10-P-23); Reduce the risk of localized and downstream flooding and runoff through the use of high infiltration measures (Policy 10-P-26).

The proposed project will comply with these goals and policies.

City of Pittsburg Municipal Code Title 13, Chapter 13.24 Sewer Service Charges (City of Pittsburg, 2007)

Administering Agency: City of Pittsburg

Compliance: Any property in the City connected to the sanitary sewer shall pay a service charge in the amount established by a city council resolution.

City of Pittsburg Municipal Code Title 13, Chapter 13.26 Sewer Maintenance and Repair (City of Pittsburg, 2007)

Administering Agency: City of Pittsburg

Compliance: Sewer lateral on private property shall be maintained by the property owner.

City of Pittsburg Municipal Code Title 13, Chapter 13.28 Stormwater Management and Discharge Control (City of Pittsburg, 2007)

Administering Agency: City of Pittsburg

Compliance: Protect and enhance water quality in the city of Pittsburg's watercourses in compliance with the Porter-Cologne Water Quality Control Act, the Federal Clean Water Act, and the NPDES permit.

City of Pittsburg Municipal Code Title 15, Chapter 15.80 Floodplain Management (City of Pittsburg, 2007)

Administering Agency: City of Pittsburg

Compliance: Protect against flood damage at initial construction; Control alteration of natural floodplains, stream channels and natural protection barriers; Control filling, grading, and dredging which may increase flood damage; Prevent or regulate flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

City of Pittsburg Municipal Code Title 15, Chapter 15.88 Grading, Erosion and Sediment Control (City of Pittsburg, 2007)

Administering Agency: City of Pittsburg

Compliance: A permit is required for grading; Grading shall be designed to comply with required vertical slope rounding, allow for adequate setback from adjoining property for safety, and ensure improvements as to not adversely affect adjoining property or mitigate if adjoining property is adversely affected; Provisions for safety, adequate foundation support, and adequate drainage facilities are required; Waters should be drained to the nearest practical city-approved drainageway directed away from the building pad by the grading.

7.14.6 Involved Agencies and Agency Contacts

Table 7.14-5 lists agency information for the project.

7.14.6.1 Permits Required and Permit Schedule

Table 7.14-6 describes the required permits related to water resources for the WPGS.

The California SWRCB Water Quality Order 99-08-DWQ: "NPDES General Permit for Storm Water Discharges Associated With Construction Activity (General Permit)" (SWRCB, 1999) authorizes a general permit for storm water discharges associated with construction activities that disturb more than 1 acre. Construction activities subject to the permit include cleaning, grubbing, grading, stockpiling, and excavation activities. The General Permit requires submittal of a Notice of Intent to comply with the permit and the development of a SWPPP for construction activities. The SWPPP will describe BMPs to prevent storm water pollution during construction activities. BMPs include erosion controls, sediment controls, and other controls to prevent storm water from contracting pollutants. The SWPPP will also include a storm water monitoring program.

The California SWRCB Water Quality Order No. 97-03-DWQ "General Permit to Discharge Stormwater Associated With Industrial Activity" (SWRCB, 1997) authorizes a general permit to regulate industrial stormwater discharges. A Notice of Intent will be filed with the CVRWQCB prior to commencement of operation. In accordance with NPDES permit requirements, a SWPPP must be developed that addresses stormwater pollution prevention during operations. The SWPPP will identify BMPs to be used at the facility and a stormwater monitoring program.

The WPGS will discharge process wastewater to the DDSD through a new wastewater discharge pipeline. Mirant Willow Pass will enter into an agreement with the DDSD for the WPGS to discharge at the DDSD

WTP's final effluent structure. The discharge limits in this agreement will be derived from DDSD's NPDES discharge requirements.

Sanitary wastewater will be discharged into the City of Pittsburg's sewer system that will convey the sanitary wastewater to the DDSD WTP. The WPGS will pay a service fee to the City and obtain a new Industrial User's permit from DDSD.

7.14.7 References

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Table 7.14–1
Water Analyses Results for Potable Water Supply Sources

Water Quality Parameters	Units	MCL	CCWD		City of Pittsburg	
			Range	Average	Range	Average
Aluminum	mg/L	1	ND	ND	ND–0.11	ND
Barium	mg/L	1	ND – 0.13	ND	ND	NA
Chloride (Cl)	mg/L	250	21 – 66	41	35 – 115	67.8
Chlorine	mg/L	4	ND – 3.9	1.89	0.1 – 2.5	1.1
Copper	mg/L	1.3	NA	0.17	ND	ND
Fluoride (F)	mg/L	2	0.8 – 0.89	0.86	0.70 – 1.04	0.81
Iron	mg/L	0.3	ND	ND	ND – 0.21	0.105
Lead	mg/L	0.015	NA	ND	ND	ND
Manganese	mg/L	0.05	ND	ND	ND – 91	46.5
Nitrate (NO_3)	mg/L	45	ND	ND	4.1 – 6.5	5.3
Specific Conductance	µS/cm	900	240 – 470	350	400 – 438	419
Sulfate (SO_4)	mg/L	250	36 – 62	48	41.6 – 93.1	72.8
TDS	mg/L	500	NA	NA	171 – 380	286
Turbidity (NTU)	NTU	5	0.01 – 1.4	0.11	0.05 – 0.39	0.1

Source: CCWD, 2006

Notes:

CCWD = Contra Costa Water District
mg/L = milligrams per liter
NA = not available or not analyzed
ND = not detected
NTU = Nephelometric Turbidity Units
µS/cm = Microsiemens per centimeter
MCL = Maximum Contaminant Level and represents either the primary or secondary drinking water standard

Table 7.14-2
Climate Summary for Antioch, California

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Monthly Temperature (°F)	45.4	50.6	54.3	58.8	64.9	71.0	74.2	73.3	70.7	63.8	53.5	46.1	60.5
Average Max. Temperature (°F)	53.6	60.2	65.4	71.4	78.5	86.1	91.0	90.0	86.3	77.6	64.2	54.6	73.2
Average Min. Temperature (°F)	37.0	40.9	43.4	46.2	51.2	56.0	57.2	56.7	55.1	50.1	42.7	37.2	47.8
Daily Max. Extreme Temp. (°F)	72	76	88	94	103	117	110	109	109	102	85	75	117
Daily Min. Extreme Temp. (°F)	20	25	27	28	35	35	41	43	41	28	24	18	18
Average Total Precipitation (inches)	2.80	2.43	1.93	0.88	0.38	0.10	0.02	0.05	0.21	0.70	1.66	2.12	13.28
Average Pan Evaporation (inches)													
Davis, CA	1.49	2.34	14.51	7.09	10.16	12.2	12.8	11.29	9.07	6.37	2.89	1.45	81.66
Manteca, CA	1.20	1.71	4.04	6.33	9.24	10.53	11.64	10.22	7.19	4.13	1.78	1.16	69.17

Notes:

[1] Temperature and precipitation data are recorded at the Antioch Pump Plant 3, CA (040232). Period of record is from March 1, 1955 through March 31, 2005. Source: Western Region Climate Center http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?caanti+nca.

[2] Pan evaporation data shown on the table is pan evaporation data from Davis, CA (1917-2002) and from Manteca, CA (1965-1977). Source: WRCC http://wrcc.dri.edu/htmfiles/westevap.final.html.

Table 7.14-3
Average and Peak Flows at DDSD Facilities (June through September 2006)

Flow	Average Daily Flow (mgd)	Peak Hourly Flow (mgd)
Total Inflow to DDSD's Wastewater Treatment Plant	14.2	22.0
Total Recycled Water Demand at LMEC and DEC	7.6	12.0

Source: Data provided by DDSD

Notes: DDSD = Delta Diablo Sanitation District
DEC = Delta Energy Center
LMEC = Los Medanos Energy Center
mgd = Million gallons per day

Table 7.14-4
Applicable Water Resources Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Administering Agency	Subsection
Federal			
CWA	Regulates discharges of wastewater and storm water to protect nation's waters. Applies to storm water runoff. Also applies to regulating fill materials into waters of the United States.	RWQCB	7.14.2.2 and 7.14.2.3
RCRA	Controls storage, treatment, disposal of hazardous waste.	RWQCB	7.13.4
CERCLA	Places responsibility for releases of hazardous materials into the environment.	RWQCB	7.13.4
State			
SWRCB Water Quality Orders	Regulates industrial storm water discharges during construction and operation of the facility.	RWQCB	7.14.2.2
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to the surface and groundwaters of the state.	RWQCB	7.14.5.2
Safe Drinking Water and Toxic Enforcement Act	Proposition 65 prohibits certain discharges to drinking water sources.	RWQCB	7.14.5.2
California Water Code Section 461 and SWRCB Resolution 77-1	Encourages conservation of water resources.	RWQCB	7.14.5
Local			
City Municipal Code	Addresses sewer service changes, stormwater management, floodplain management, and grading, erosion and sediment control.	City of Pittsburg	7.14.2.2, 7.14.2.3, and 7.14.5.3
General Plan	Address issues such as drainage, erosion control, facility siting in flood zones, and storm water discharge.	City of Pittsburg	7.14.2.2 and 7.14.2.3

Notes:

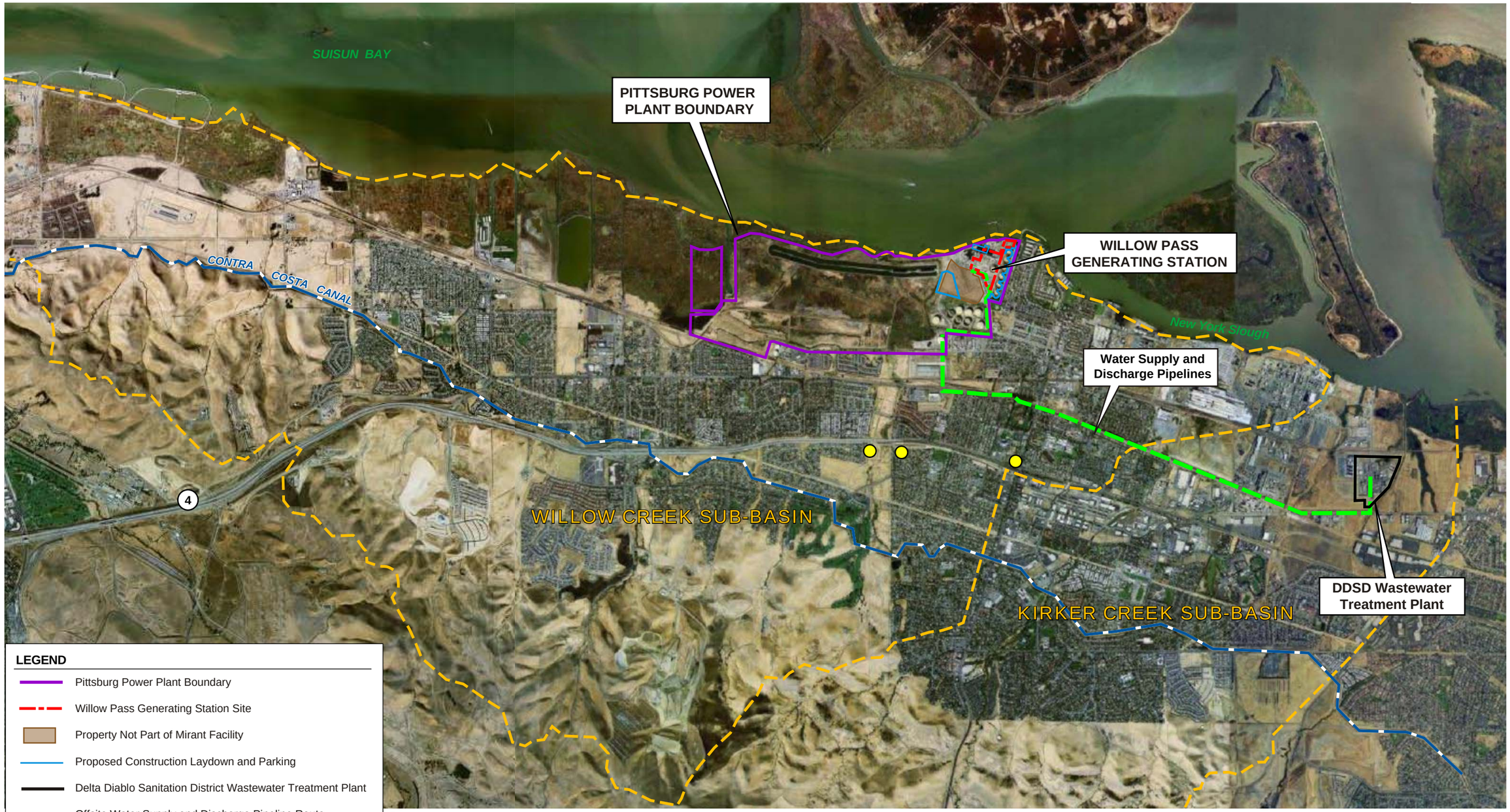
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CWA = Clean Water Act
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board
SWRCB = State Water Resources Control Board
WDR = Waste Discharge Requirements

Table 7.14-5
Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Recycled water supply and wastewater discharge	Delta Diablo Sanitation District 2500 Pittsburg-Antioch Highway Antioch, CA 94509-1373	Gary Darling General Manager	(925) 756-1920 Email: garyd@ddsd.org
Potable water supply	City of Pittsburg, Planning Department 65 Civic Avenue Pittsburg, CA 94565	Kristin Vahl Associate Planner	(925) 252-6941 kvahl@ci.pittsburg.ca.us
Water Quality Industrial General Permit	State of California Environmental Protection Agency California Regional Water Quality Control Board San Francisco Bay Region 1515 Clay Street, Suite 1400 Oakland, CA 94612	Michelle Rembaum-Fox	(510) 622-2387
Stormwater runoff and erosion control	City of Pittsburg, Clean Water Program (NPDES)	Jason Burke Assistant Planner/NPDES Coordinator	(925) 252-4920

Table 7.14-6
Permits Required

Responsible Party	Permit/Approval	Schedule
San Francisco Bay RWQCB	Construction Activities Stormwater General Permit; California RWQCB Water Quality Order 99-08-DWQ (Addresses stormwater during construction)	30 days prior to construction
San Francisco Bay RWQCB	Industrial Activities Stormwater General Permit; California RWQCB Water Quality Order 97-03-DWQ (Addresses stormwater during plant operation)	30 days prior to start of plant operations
City of Pittsburg	Design Review (Requires drainage and grading plans be submitted for review and approval. Requires a stormwater control plan for projects that create more than one acre of impervious surface)	At least 8 to 12 weeks prior to earth moving activities
DDSD	Water Discharge Special Agreement required for discharge of process wastewater	Prior to start of plant operations
DDSD	Industrial User's Permit for discharge of sanitary wastewater	Prior to start of plant operations
Note: The agreement between Mirant Willow Pass, LLC, and DDSD will cover discharge of both process wastewater and sanitary wastewater.		



LEGEND

- Pittsburg Power Plant Boundary
- Willow Pass Generating Station Site
- Property Not Part of Mirant Facility
- Proposed Construction Laydown and Parking
- Delta Diablo Sanitation District Wastewater Treatment Plant
- Offsite Water Supply and Discharge Pipeline Route
- Contra Costa Canal
- Sub-Basin Boundary
- Municipal Well

Source:
Google Earth 2007

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0 1
Approximate Scale in Miles

REGIONAL HYDROLOGIC SETTING

Willow Pass Generating Station
Mirant Willow Pass, LLC
Pittsburg, California

June 2008
28067343

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FIGURE 7.14-1

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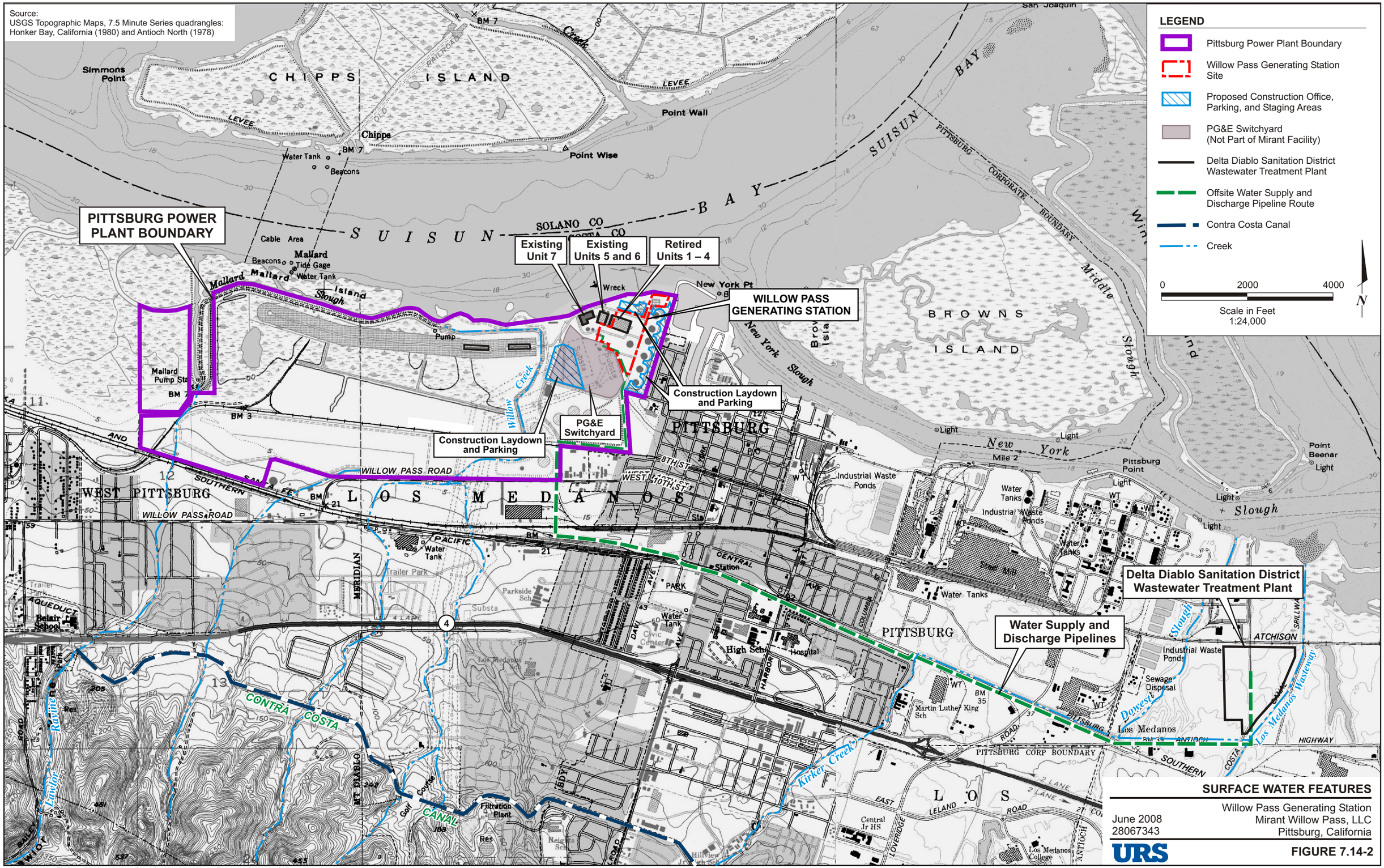

SURFACE WATER FEATURES

Willow Pass Generating Station
Mirant Willow Pass, LLC
Pittsburg, California

June 2008
28067343

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FIGURE 7.14-2

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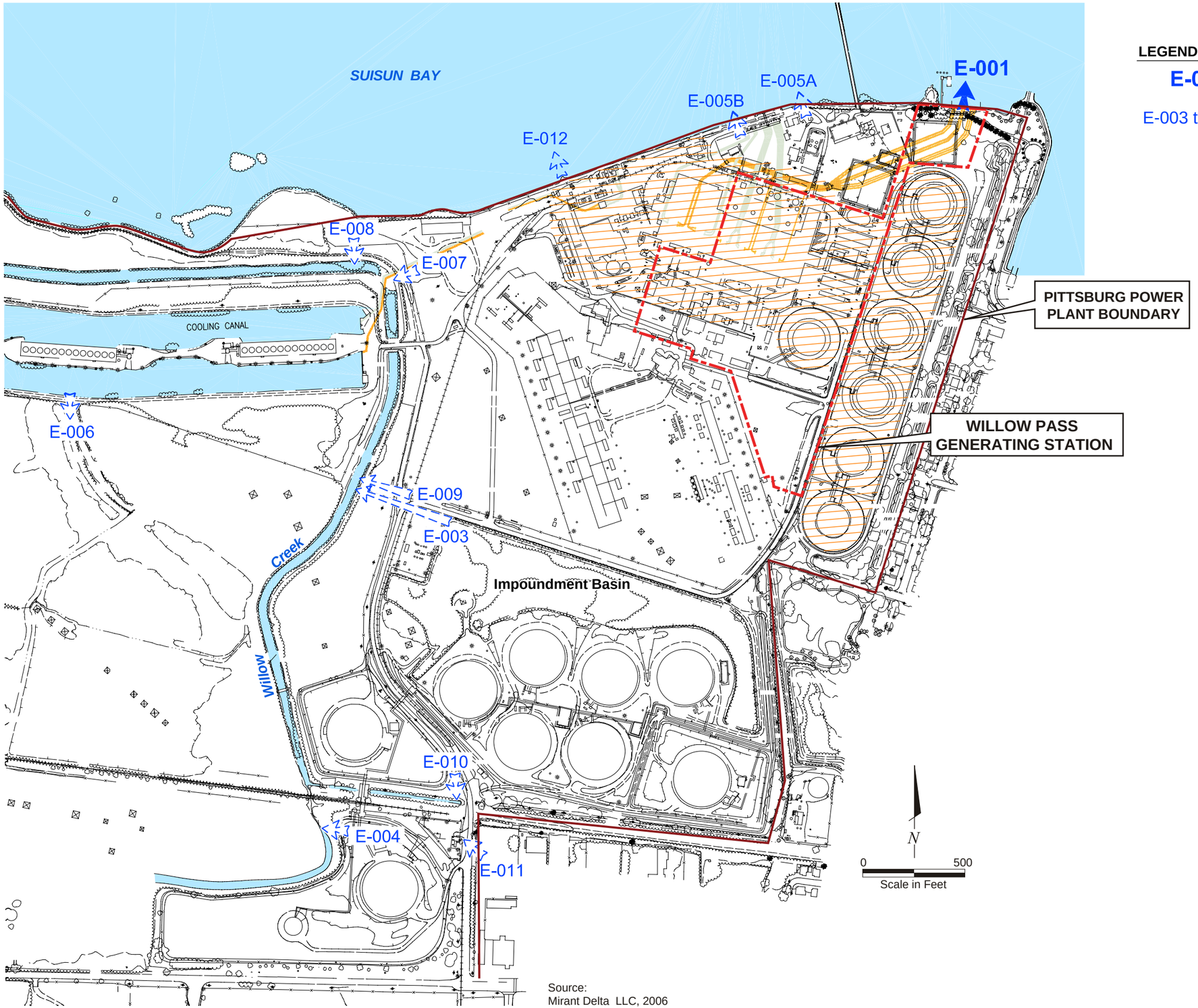

Source:
Mirant Delta LLC, 2006

LEGEND

E-001 Stormwater and PPP Cooling Water Discharge

E-003 to E-012 Stormwater Outfalls Managed Under Statewide General Permit

Stormwater Routed Through Oil-Water Separator (E-001G) to E-001

Pittsburg Power Plant Boundary

Willow Pass Generating Station Site

APPROXIMATE DRAINAGE ACREAGES

OUTFALL	TOTAL	TO OIL-WATER SEPARATOR
E-001G	42	42
E-003*	105	0
E-004*	14	0
E-005A	0.5	0
E-005B	0.5	0
E-007	7	0
E-008	1	0
E-009	7	0
E-010	0.5	0
E-011	0.5	0
E-012	0.5	0
TOTAL	**178.5**	**42**

* When necessary, stormwater generated in the drainage areas associated with these outfalls can be transferred to the oil-water separator for treatment before discharge.

EXISTING PITTSBURG POWER PLANT DRAINAGE

Willow Pass Generating Station
Mirant Willow Pass, LLC
Pittsburg, California

June 2008
28067343

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FIGURE 7.14-3

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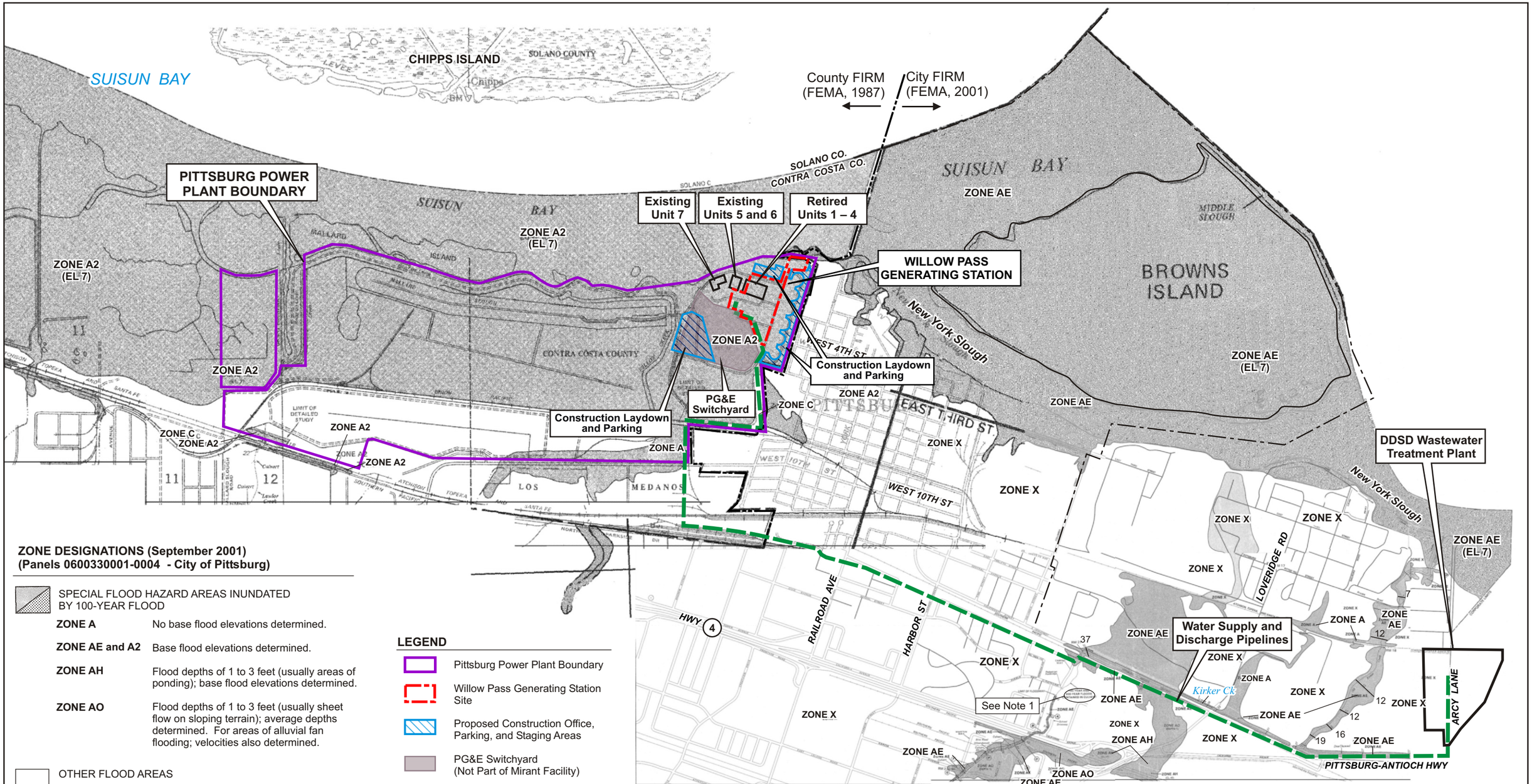

ZONE DESIGNATIONS (September 2001)
(Panels 0600330001-0004 - City of Pittsburg)

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A	No base flood elevations determined.
ZONE AE and A2	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding; velocities also determined.

OTHER FLOOD AREAS

ZONE X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.
EL 7	Base Flood Elevation in Feet Where Uniform Within Zone**

** Referenced to the National Geodetic Vertical Datum of 1929

LEGEND

- Pittsburg Power Plant Boundary
- Willow Pass Generating Station Site
- Proposed Construction Office, Parking, and Staging Areas
- PG&E Switchyard (Not Part of Mirant Facility)
- Offsite Water Supply and Discharge Pipeline Route

Note 1:
100-year and 500-year floods contained in culvert

Source:
FEMA FIRM Maps 0060 250115B (July 1987), 0600 250120B (July 1987), and 0600330001-0004 (September 2001)

FLOODPLAINS IN VICINITY OF THE SITE

June 2008
28067343

Willow Pass Generating Station
Mirant Willow Pass, LLC
Pittsburg, California

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FIGURE 7.14-4

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