5.4 WATER RESOURCES

This section presents the environmental effects of the construction and operation of the Palomar Energy Project on water resources, which include flood hazards, surface water, and groundwater. The evaluation includes the power plant site, the water supply and brine return pipelines, and the gas pipeline.

5.4.1 Affected Environment

Western San Diego County, where the project site is located, is an area of warm, dry summers and mild winters. The topography of this region consists of narrow winding valleys and rolling to hilly uplands that are traversed by several rivers and associated small creeks. The creeks flow for only a short period of time after heavy rainstorms (U.S. Soil Conservation Service and Forest Service, 1973).

5.4.1.1 Precipitation

Most precipitation occurs during the months of December through April and is infrequent in summer. Runoff in the area results primarily from rainfall. However, the melting of snowpack and surfacing groundwater springs also contribute small additional amounts of runoff. The flow of surface and groundwater in the area is in an east to west direction toward the Pacific Ocean.

As summarized in Section 5.2, Air Quality, climatological data representative of the project area are available from the Miramar Naval Air Station, located approximately 15 miles south of Escondido. Temperatures in the project area range from an average of 57º F in December and January to 72º F in August. Precipitation in the vicinity of Miramar averages approximately 10.6 inches per year, with most of the precipitation occurring during winter. Table 5.2-3 in the Air Quality section presents average monthly precipitation data for the period from 1947 to 1993.

5.4.1.2 Groundwater Resources

Groundwater is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. Groundwater bearing formations sufficiently permeable to transmit and yield significant quantities of water are called aquifers.

Regional Hydrogeology

The Palomar site is located in the San Diego Hydrologic Basin, which occupies approximately 3,900 square miles of San Diego County and portions of Orange and Riverside Counties in southwestern California. This hydrologic basin lies within the Peninsular Ranges physiographic province of California. The Peninsular Ranges physiographic province is a geographic area that is characterized by a relatively narrow coastal plain on the west, and rugged mountains and steep-walled, narrow valleys inland that generally trend from east to west.

The federal Clean Water Act and California's Porter-Cologne Water Quality Control Act (Porter-Cologne) require that Water Quality Control Plans (Basin Plans) be prepared to protect water resources for the designated hydrologic basins in California. The San Diego Region Basin Plan was approved by the State Water Resources Control Board in 1975 and updated in 1994. The San Diego Region Basin Plan identifies water quality objectives and beneficial uses for groundwater and surface waters located in the San Diego Region.

All major drainage basins within the San Diego Hydrologic Basin contain groundwater basins. These basins are relatively small in area and usually shallow. Although the groundwater basins are limited in size, their groundwater yield has been historically important to the development of the area. However, most of the groundwaters in the area have been extensively developed and the availability of potential future uses is limited.

Groundwaters in the San Diego area can have as many as six designated beneficial uses including: Municipal and Domestic; Agricultural; Industrial Service Supply; Industrial Process Supply; Groundwater Recharge; and Freshwater Replenishment. Nearly all of the groundwater development in the area has been for the purpose of Municipal and Agricultural supply. Groundwaters that meet the criteria mandated by the Sources of Drinking Water Policy are designated MUN. Unless otherwise designated by the San Diego Regional Water Quality Control Board (SDRWQCB), all groundwaters in the area are considered suitable or potentially suitable as sources of drinking water. Beneficial uses for the groundwater of Carlsbad Hydrologic Unit, Escondido Creek Hydrologic Area, include Municipal and Domestic, Agricultural, and Industrial Service Supply. Table 5.4-1 presents water quality objectives for Escondido Creek Hydrologic Area groundwater (SDRWQCB, 1994).

Table 5.4-1 Water Quality Objectives for Escondido Creek Hydrologic Area Groundwater

Constituent	Concentration (mg/L)
Total Dissolved Solids	750
Chlorides	300
Sulfate	300
% Sodium	60
Nitrate	10
Iron	0.3
Manganese	0.05
Foaming Agents (MBAS)	0.5
Boron	0.75
Odor	none
Turbidity	5
Color	15
Fluoride	1.0

Local Groundwater

Groundwater in the area of the Palomar site would likely be encountered within 20 feet of the ground surface (Giesick, 2001). However, bedrock was encountered at six to eleven feet below ground surface during the site-specific geotechnical investigation; therefore, the borings were terminated at that depth. Groundwater was not encountered during the investigation (GEOCON, 2001). Groundwater flow direction is in the general direction of flow of Escondido Creek, to the southwest (Giesick, 2001).

5.4.1.3 Surface Water Resources

Surface water is the water exposed at the earth's surface. It includes the ocean, lakes, rivers, streams, reservoirs, and similar water bodies.

Surface Water Drainage

The project site is located within the San Diego Drainage Province, which corresponds with the San Diego Hydrologic Basin. The San Diego Drainage Province is under the jurisdiction of the SDRWQCB. The plant site is located within the Carlsbad Hydrologic Unit, Escondido Creek Hydrologic Area. The Carlsbad Hydrologic Unit is a 210-square mile, roughly triangular shaped strip which includes unique coastal lagoons, three major creeks, three lakes, urban and natural drainage, native vegetation, open space, agriculture, fisheries and beaches.

Local Surface Water

Escondido Creek flows through Lake Wohlford northeast of Escondido, and then through the City of Escondido, eventually emptying into the Pacific Ocean at San Elijo Lagoon. Most of the 13 miles of the creek that flows through the City of Escondido have been contained within a concrete channel since the late 1960s (see Figure 5.4-1). In the project area, the creek extends in a northeast to southwesterly direction approximately 0.75 miles south of the power plant site. The portion of the creek near the project site is concrete-lined. A creek improvement project is underway to restore the unlined portion of the creek to a more natural state (Escondido Creek Conservancy, 2000).

Existing beneficial uses for Escondido Creek include Municipal and Domestic Supply, Agricultural Supply, Contact Water Recreation, Non-contact Water Recreational, Warm Freshwater Habitat, Cold Freshwater Habitat, Wildlife Habitat. Industrial Service Supply is a potential beneficial use for Escondido Creek. Water quality objectives (SDRWQCB, 1994) for Escondido Creek are presented in Table 5.4-2.

The proposed 20-acre site is one planning area within the planned 186-acre Escondido Research and Technology Center (ERTC) industrial park. It is currently undeveloped with some rough grading. The elevation of the site is highest at the center and slopes away to the east and west. The grading of the proposed site will be completed as part of the grading for the ERTC industrial park, and prior to initiation of any work on the proposed project.

Figure 5.4-1 Hydrologic Setting

Table 5.4-2 Water Quality Objectives for Escondido Creek

Constituent	Concentration (mg/L)
Total Dissolved Solids	500
Chlorides	250
Sulfate	250
% Sodium	60
Nitrogen & Phosphorous	-- [a]
Iron	0.3
Manganese	0.05
Foaming Agents (MBAS)	0.5
Boron	0.75
Odor	None
Turbidity	20
Color	20
Fluoride	1.0

a – Concentrations of nitrogen and phosphorus must be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total Phosphorus concentrations must not exceed 0.05 mg/L in any stream at the point where it enters standing water. Analogous threshold values have not been set for Nitrogen.

Wetlands

As shown on Figure 5.4-2, there are wetlands in the western portions of the overall ERTC industrial park site, but there are no wetlands on the Palomar project site, which is in the northeastern portion of the industrial park site. Figure 5.4-2 identifies a number of areas on the ERTC industrial park site as non-jurisdictional waters of the United States, including one such area within the Palomar site. These are ephemeral channels between two and four feet wide. These ephemeral channels constitute federal and State of California jurisdictional waters under §§ 401 and 404 of the Clean Water Act and/or § 1603 of the California Fish and Game Code. The total area of these jurisdictional waters is estimated to be less than one acre throughout the entire ERTC industrial park site, and a small fraction of one acre within the Palomar site. The resources associated with the ephemeral drainage on the Palomar site are relatively minimal, not dissimilar from those found in the surrounding area, and support no unique biological functions. Thus, impacts to this resource would not be considered significant.

Floodplains

Based on Federal Emergency Management Agency (FEMA) Map 06073C, Community 060290, Panel 1076F, dated June 19, 1997, the power plant site is located in Zone X, which is outside the 500-year floodplain. Therefore, the facility is not considered to have the potential for flooding.

Figure 5.4-2 Jurisdictional Waters and Wetlands

5.4.1.4 Water Supply

Depending on local weather conditions, typically 75 to 95 percent of San Diego County's water is imported. In 2000, imported water sources contributed 84 percent of the total water used. Imported water is currently obtained from the Metropolitan Water District of Southern California (MWD), but a water transfer agreement with the Imperial Irrigation District is expected to begin in 2002, with an initial delivery of 20,000 acre-feet. By 2011, the transfer will bring up to 200,000 acre-feet of Colorado River water annually to San Diego County. Colorado River water is imported by MWD via the 242-mile Colorado River Aqueduct. Water from northern California is imported via the 444-mile California Aqueduct.

Local water sources (16 percent of the total water used in 2000), include surface water (66.8 percent), wells (17.6 percent), recycled (11.7 percent) and brackish groundwater desalination (3.9 percent) (San Diego County Water Authority, 2001).

Reclaimed water is an important and growing component of the area's water supply. Reclaimed water is obtained through treatment of municipal wastewater to produce a safe and reliable water supply for non-potable uses. The San Diego County Water Authority (Authority) reported that in 1993, the total volume of reclaimed water used in their service area was 9,713 acre-feet, which represented a 24 percent increase in reclaimed water use over the previous year. The Authority estimates that the total reclaimed water use volume in their service area will increase to 50,000 acre-feet per year when planned water reclamation projects are completed in the year 2010 (SDRWQCB, 1994).

5.4.2 Environmental Impacts

Significant effects are defined by California Environmental Quality Act Guidelines and applicable LORS. The potential impacts of the project on water resources have been evaluated based on:

- HARRF water supply,
- State water policy,
- Surface water quality and flood hazards, and
- Groundwater degradation

5.4.2.1 Project Water Use and Discharge Characteristics

Potable water for domestic and sanitary use will be provided to the Palomar site by the Rincon del Diablo Municipal Water District. Approximately 1,400 gallons per day of potable water will be supplied to the plant.

To conserve water, reclaimed water will be used for power generating activities. Approximately 3.6 million gallons per day of reclaimed water will be provided by the City of Escondido's Hale Avenue Resource Recovery Facility (HARRF). (See Appendix G for "will

serve" letters.) Reclaimed water may also be provided by the HARRF to the ERTC for landscape watering. Currently, the HARRF provides secondary treatment of 17.5 million gallons per day of wastewater from the City of Escondido and from the Rancho Bernardo area. Effluent is discharged from the HARRF to the Pacific Ocean via a 14-mile pipeline that connects to an ocean outfall pipeline near San Elijo Lagoon. The effluent exits the outfall pipeline approximately 1.5 miles offshore through diffuser ports 110-feet deep in the Pacific Ocean.

The ongoing Escondido Regional Recycled Water Project (ERRWP) involves upgrading existing HARRF treatment facilities to produce tertiary treated recycled water and construction of approximately 24 miles of 4-inch to 30-inch diameter pipeline and two underground storage reservoirs. One of these pipelines is a 24-inch reclaimed water supply main extending northeast from the HARRF along Escondido Creek. The Palomar Energy Project's water supply pipeline will connect with this ERRWP pipeline at Harmony Grove Road just north of Escondido Creek. The power plant's brine return pipeline will connect with an ERRWP brine return line at the same location as the supply line at Harmony Grove Road and Escondido Creek. Upon full completion of the ERRWP, it is expected that the HARRF will provide approximately 18 million gallons per day of reclaimed water. Expected startup for the ERRWP is May 2002 (City of Escondido, 2000). Water quality characteristics of HARRF water are provided in Table 2.4-3. As this water will be used throughout the City of Escondido for irrigation purposes (e.g., sprinkling of golf courses, parks, and landscaped medians), this water will meet the applicable regulatory requirements for such uses involving potential human contact.

5.4.2.2 Water Conveyance

Potable water for the power plant will be supplied via a connection with an existing water line in Enterprise Street, adjacent to the northeast of the plant site. Reclaimed water will be conveyed to the site via a new 1.1-mile, 16-inch reclaimed water supply pipeline extending from the existing City of Escondido reclaimed water main. Brine from the project will be returned to the HARRF via a new 1.1 mile, eight-inch return pipeline routed alongside the reclaimed water supply pipeline and connecting to the City of Escondido's existing bring return line. There will be no discharge of wastewater from the power plant to surface waters or groundwater.

See Section 2.7.2, Project Description and Figure 2.2-1 for a description of the routing of the supply and return lines.

5.4.2.3 Water Treatment

Water treatment varies according to the quality required for each of the plant's water uses. The circulating water, HRSG makeup, and CTG evaporative cooler makeup require treatment. The service water, potable water, and fire protection water do not require treatment. Water Balance Diagrams for facility operations are presented in Section 2.0, Figures 2.4-6 (base load) and 2.4-7 (peak load). Makeup water for the circulating water system will be supplied from a raw water storage tank. Water conditioning chemicals may be fed into the makeup

water to minimize corrosion and to inhibit scaling and biofouling. Sulfuric acid will be fed into the circulating water system to neutralize alkaline conditions and control scaling. The sulfuric acid will be stored onsite in an aboveground storage tank (AST) and fed into the circulating water system at an amount proportional to the makeup flow.

To further inhibit scale formation, an organic phosphate inhibitor solution may be fed into the circulating water system in an amount proportional to the blowdown flow. The inhibitor solution will be stored onsite in an AST. In addition, sodium hypochlorite will be shock-fed into the system as a biocide. The sodium hypochlorite will be stored onsite in an AST.

Because makeup water for the HRSGs must meet stringent specifications for suspended and dissolved solids, water supplied from the raw water storage tank will be filtered and then demineralized using ion exchange equipment. Depending on demineralization economics, initial treatment by a reverse osmosis system may precede final treatment by ion exchange. The demineralized product water will be stored in a 200,000-gallon AST.

A chemical feed system will provide additional conditioning of the condensate and feedwater circulating in the steam cycle. An oxygen scavenger and an alkaline solution for pH control will be fed into the steam condensate. Additionally, a solution of disodium phosphate and trisodium, phosphate will be fed into the feedwater system of the HRSG. A sampling and analysis system will monitor the water quality at various points in the plant's steam cycle. The water quality data will be used to make adjustments in the water treatment process and to determine the need for other corrective operational or maintenance measures.

Water from the raw water storage tank will be filtered prior to use as makeup for the CTG coolers. Alternatively, if reverse osmosis is included in the water treatment system, reverse osmosis product water may be used as makeup for the CTG evaporative coolers.

5.4.2.4 Construction Wastewater

Wastewater generated at the construction site will include sanitary wastes and equipment wash water. Construction-related sanitary wastes, collected in portable self-contained chemical toilets, will be pumped periodically and transported by a licensed hauler to a sanitary wastewater treatment facility. Equipment wash water may be generated at designated wash areas. The washwater will be transported to a wastewater treatment facility via a licensed vacuum truck hauler.

Project commissioning activities will generate a one-time use of approximately 400,000 gallons of reclaimed water for hydrostatic testing of plant pipelines (e.g., circulating water and return lines, fire water lines) during plant commissioning immediately prior to commercial operations. The hydrostatic test water subsequently will be used in the plant's cooling system, and ultimately disposed in the brine pipeline that will transport project wastewater back to the HARRF.

5.4.2.5 Operations Wastewater

The sanitary wastewater system at the Palomar facility will collect sanitary wastewater from sinks, toilets, and other sanitary facilities and discharge it to the City of Escondido's HARRF via a connection to an existing City sanitary sewer line in Enterprise Street adjacent to the northeast of the site.

The plant's process wastewater system will collect wastewater produced from the plant equipment, including the cooling tower, HRSGs, CTG evaporative coolers, water treatment system, chemical feed area drains, and general plant drains. Water from the plant wastewater system will be sent to the cooling tower basin for use. Blowdown from the cooling tower, and no other wastewaters, will be discharged to the brine pipeline that will transport project wastewater back to the HARRF. Requirements for discharges to the HARRF are identified in Table 5.4-3.

Table 5.4-3 HARRF Discharge Requirements

Pollutant	Units	Standard
Iron	mg/L lbs/day	0.3 22
Manganese	mg/L lbs/day	0.10 75
Methylene Blue Active Substances	mg/L lbs/day	0.5 37
Boron	mg/L lbs/day	1.1 83
Color	Units	20
Fluoride	mg/L lbs/day	1.5 112
Ammonia (NH_4 plus NH_3)	mg/L lbs/day	25 1877
Phenolic Compounds	µg/L lbs/day	1.0 7.5
Oil and Grease	No visible sheen.	
pH	Within the range of 6.5 to 8.5 pH units.	
Inorganic Chemicals	Not to exceed limits specified in 22 CCR Table 64431-A of §6431.	
U.S. EPA Toxic Pollutants	Not to exceed limits specified in 40 CFR 131.36.	
Organic Chemicals	Not to exceed limits specified in 22 CCR Table 64444-A of §64444.	
Radionuclides	Not to exceed limits specified in 22 CCR Table 4 §64443.	

The City of Escondido requires that industrial dischargers obtain an Industrial User Permit, develop a Management Plan for toxic and prohibited organic chemicals, and complete a Baseline Monitoring Report.

In addition, the power plant is subject to the wastewater pre-treatment standards defined in 40 CFR Part 403 (general pretreatment standards) and Part 423 (categorical standard) and the City of Escondido industrial wastewater ordinance. The general standards prohibit introducing:

- Pollutants that create a fire or explosion hazard,
- Pollutants that may cause corrosive structural damage to a publicly owned treatment works (POTW), but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges,
- Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW,
- Any pollutant including oxygen-demanding pollutants released at a flow rate and/or pollutant concentration which will cause interference with the POTW in this case the HARRF),
- Heat in amounts that will inhibit biological activity in the POTW,
- Petroleum oil, and
- Pollutants that result in the presence of toxic gases, vapor, or fumes.

The standards defined in 40 CFR 423 are applicable to facilities primarily engaged in the generation of electricity for distribution and sale, whose wastewater results from a process utilizing fossil fuel in conjunction with a thermal cycle employing a steam water system as the thermodynamic medium. For new sources discharging to a publicly owned treatment works, these standards include:

- There may be no discharges of polychlorinated biphenyl compounds.
- Discharges of chemical metal cleaning wastes (wastewater resulting from cleaning any metal process equipment including boiler tube cleaning) may not contain total copper in concentrations that exceed 1.0 mg/l maximum for one day.
- The quantity of pollutants discharged in cooling tower blowdown may not exceed the concentrations listed in Table 5.4-4.

Table 5.4-4 Pretreatment and Categorical Standards

Pollutant	Pretreatment Standards Maximum for 1 day (mg/l)
126 Priority Pollutants[1] contained in chemicals added for cooling tower maintenance, except:	non-detectable
Chromium, total	0.2
Zinc, total	1.0

[1] contained in 40 CFR 423

At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

Table 5.4-5 summarizes the types and quantities of operational wastewater to be generated by the Palomar project. Figures 2.4-6 and 2.4-7 in Section 2.0, Project Description show the power plant's wastewater streams and the disposition of wastewater.

Table 5.4-5 Project Wastewater Volumes

Wastewater Type	Estimated Quantity (Gallons per Day)	Operational Process
Cooling Tower Blowdown	889,000	Blowdown from cooling tower, evaporative cooler, HRSG units, and deionization system
Sanitary Wastewater	15,840	Sanitary wastewater, potable water drains, and discharge from oil/water separator

5.4.2.6 Water Supply Impacts

Impacts to water supply from power plant activities will be considered significant if the project causes:

- Substantial depletion of groundwater resources;
- Substantial interference with groundwater recharge;
- Activities which result in the use of large amounts of potable water;
- Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site,
- Alteration of the direction or rate of flow of groundwaters; and
- A change in the amount of surface water in any water body.

The 1,400 gallons per day of potable water supplied to the project by the Rincon del Diablo Municipal Water District is a minimal amount of water and will have no impact on the availability of water for other users. In addition, the Palomar project will require an average of 3.6 million gallons of reclaimed water per day. With completion of the ERRWP in 2002, well before the power plant comes on line in 2004, the HARRF will have the ample capacity to provide the necessary source water to the project (Rowlen, 2001). As the expected ultimate capacity of the ERRWP will be approximately 18 million gallons of reclaimed water per day, the power plant's requirements will not impact other potential users of ERRWP reclaimed water.

Because reclaimed water is available for cooling use, fresh water is not needed for that purpose. State Water Code §13551 prohibits use of potable water for non-potable sources if suitable recycled water is available. It also states that any use of recycled water in lieu of potable water is deemed to constitute a reasonable beneficial use of that water. In addition, State water Resources Control Board Resolution 75-58 sets forth policies concerning the use and disposal of inland water used for power plant cooling. As the Palomar Energy Project is using reclaimed water as its primary water source, the project complies with the State Water Code and Resolution 75-58. Thus, no discussion of alternative water sources is required.

5.4.2.7 Surface Water Quality and Flooding Impacts

Impacts related to flood hazards and surface water quality will be considered significant if the project causes:

- Substantial flooding, erosion, or siltation;
- Substantial degradation of groundwater quality;
- Violate any water quality standards or waste discharge requirements; and
- Discharge into surface waters resulting in any substantial alteration of surface quality including, but not limited to, temperature, dissolved oxygen, or turbidity.

As stated earlier, the power plant will be located within Planning Area 1 of the proposed ERTC industrial park. Approximately 14 acres will be used for the power generating facilities themselves, with an additional six acres of bermed and landscaped area surrounding the facilities. The landscaping will be a component of the facility's erosion control program in addition to its aesthetic benefits. Storm Water Pollution Prevention Plans (SWPPP) will be developed and implemented to assure no significant increase in erosion from construction and operational activities. Additionally, erosion and sediment controls, surface water pollution prevention measures, and other best management practices (BMPs) will be developed and implemented for project construction and operation. The SWPPPs will be prepared in accordance with Water Quality Order 99-08-DWQ, State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity, and Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001 Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities.

Surface drainage systems at the facility will be designed to handle the flow resulting from a 25-year, 24-hour duration rainfall event. The surface drainage systems also will be designed to prevent flooding of permanent plant facilities. The plant site will drain in an easterly direction and runoff from the site will be directed and discharged to the City of Escondido's storm drain system.

Aboveground storage tanks (ASTs) at the plant site will be located within secondary containment areas to control accidental spills and leaks. A spill contingency plan will be prepared for handling of all chemicals and wastes generated at the site. Stormwater runoff from the curbed portions of the site (with potential for oil contamination) will be collected and routed through an oil-water separator for discharge to the sanitary sewer system. There will be no surface discharges of untreated stormwater runoff from the curbed portions of the generating facility. Therefore, the project is not expected to adversely impact surface water quality.

The total impervious area created at the power plant site (five to ten acres) will be significantly less than one percent of the tributary watershed area. Thus, the project will not cause a significant increase in runoff or significantly contribute to offsite flooding.

The plant site is located outside the 500-year flood plain, as defined by FEMA. Therefore, the project will not be exposed to hazards related to flooding. No wetlands are located on the Palomar project site and the ephemeral drainage is relatively minimal and supports no unique biological functions. Therefore, Palomar project will have no significant impacts on wetlands.

5.4.2.8 Pipeline Impacts

Impacts to water resources from the reclaimed water supply and brine return pipelines and gas pipeline are expected to be limited to land disturbance during construction. With the exception of the section of pipeline route that extends south through the planned industrial park to Harmony Grove Road, these pipelines will be constructed within the rights-of-way of existing roadways. The SWPPP for the Palomar project's construction phase will identify BMPs to minimize the potential for erosion. The upgraded natural gas pipeline that will be installed in central Escondido about one mile from the site, also will be installed within the rights-of-way of existing streets. No significant erosion or sediment impacts are expected due to construction of the water or natural gas pipelines.

5.4.2.9 Groundwater Impacts

Activities at the plant site have little potential to impact groundwater resources. Storm water runoff from the power plant site will be controlled and managed in accordance with BMPs as provided in the SWPPP that will be prepared for both construction and operations. Thus, no significant groundwater impacts would be expected from storm water runoff.

No underground storage tanks are proposed at the power plant site. Aboveground storage tanks (ASTs) will have secondary containment structures; therefore, the potential for release is considered remote. Spills that occur will be cleaned up immediately by trained individuals.

The project will generate solid wastes and small amounts of hazardous wastes. However, these wastes will be properly managed and disposed or recycled offsite using licensed transporters. See Section 5.13 for further information on waste management.

The Palomar project will employ approximately 20 people during operations. Sanitary wastes will be disposed via a connection with the City of Escondido's sanitary wastewater system, and no adverse impacts to groundwater are anticipated from the disposal of sanitary wastes.

Process wastewater includes cooling tower blowdown (which constitutes all of the process wastewater), sanitary wastewater, and floor drains. Total wastewater generated is estimated to be 889,000 gallons per day (based on annual average operating conditions). Process wastewater constituents are characterized in Table 5.4-6.

Table 5.4-6 Process Wastewater Constituents

Constituent	Average Concentration at Base Load (PPM)	Average Concentration at Peak Load
Ca	924	923
Mg	476	475
Na	1548	1547
K	93	92
Total Alkalinity	150	150
SO_4	1867	1865
Cl	1314	1313
NO_3	8	8
CO_2	1	1
SiO_2	20	20
TDS	3923	3920

Wastewater will be conveyed from the power plant site to the HARRF via a pipeline and the discharge will meet applicable requirements. Therefore, the disposal of project wastewater is not expected to cause degradation of groundwater water quality.

5.4.3 Mitigation Measures

This section presents the Palomar project's proposed mitigation measures that will be implemented to reduce impacts to water resources in areas affected by the power plant and the associated pipelines. Additionally, the measures specified in Section 5.6, Agriculture and Soils will be implemented to minimize impacts to the soil resources, control erosion, and minimize associated water quality-related impacts.

WTR-1. Design site drainage system to be in conformance with good engineering practices and to meet applicable local regulatory requirements.

WTR-2. Provide appropriate storm water drainage and landscaping for the plant site to minimize soil erosion and sediment transport associated with runoff from the site.

WTR-3. Perform construction activities in accordance with the SWPPP that will be prepared for the construction phase of the project. Implement the identified BMPs to control erosion, sediment transport, and discharge of pollutants during construction.

WTR-4. Conduct operations at the power plant site in accordance with the SWPPP that will be prepared for ongoing operations. Implement the BMPs identified in the SWPPP to control erosion and prevent or control pollutants associated with the operation of the plant from entering stormwater discharges.

WTR-5. Perform maintenance of construction equipment away from the project site or in a designated paved and bermed area.

WTR-6. Meet requirements of Industrial User Discharge Permit and all local, state, and federal pretreatment standards.

5.4.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to water resources will occur due to Palomar Energy Project construction or operation.

5.4.5 Cumulative Impacts

The projects included in the assessment are two small <50 MW gas-fired combustion turbine power plants under development near the Palomar site, and the overall ERTC industrial park within which the power plant site is located. Both projects are simple-cycle facilities with insignificant water supply requirements. Therefore, Palomar project water use will not contribute to a significant cumulative water supply impact.

The Palomar project will not cause or contribute to cumulative impacts to surface water quality, when considered together with the two small power plants. The two small power plant projects are assumed to utilize good engineering practices and Best Management Practices (BMPs) in their design, construction and operation, as will the Palomar project. This would be expected to avoid significant impacts to surface water quality.

The following paragraphs discuss potential cumulative effects of the overall ERTC industrial park and the Palomar project, which will be located in Planning Area 1 of the industrial park's eight planning areas.

Overall ERTC Industrial Park Construction

Industrial park construction will be subject to the City of Escondido grading, drainage, and erosion control requirements, as well as NPDES construction stormwater requirements.

The overall ERTC industrial park is expected to utilize good engineering practices and Best Management Practices in design, construction, and operation, including SWPPPs and erosion control plans for both construction and operations.

These issues are being addressed in detail in the City of Escondido's CEQA review. The drainage systems and SWPPPs for Planning Area 1 and the remainder of the industrial park site will be coordinated with each other to ensure that they function harmoniously. Cumulative water demand during construction will be focused on potable water for domestic (site workers) consumption, and water needed for dust suppression and soil compaction. Total water use during construction is estimated at approximately five million gallons, or approximately 25,000 gallons per day. Portable toilets will be used for sanitary purposes. Additional temporary water use in ERTC construction is not expected to have a significant impact.

Planning Area 1 Construction Phase Earthwork

The SWPPP prepared for ERTC construction will encompass the earthwork (rough grading) activities throughout the ERTC site, including Planning Area 1, the Palomar site. Over a 70 day-period, approximately 1.5 million gallons or 20,000 gallons per day of water will be used for the earthwork in Planning Area 1, out of a total of approximately four million gallons for the industrial park-wide earthwork. Portable toilets will be used on-site.

ERTC Operations

Because the Palomar facility will utilize reclaimed water for all but the drinking and sanitary needs of a 20-person workforce during operations, it will not affect the available quantities of potable water available to other users. In addition to potable water and sanitary wastewater services for the ERTC industrial park long-term occupants, the industrial park also may use approximately 2,000 gallons per day of reclaimed water for landscape watering. Even when added to the much larger amounts of water used by the power plant for cooling water purposes, the Escondido Regional Reclaimed Water Project's ultimate reclaimed water capacity is expected to be approximately five times the combined level of demand of the power plant and the remainder of the ERTC site. Thus, there should be no significant impacts on the availability of reclaimed water for other users.

No cumulative impacts are expected from wastewater disposal because the HARRF has more than adequate capacity to manage the additional discharge from the Palomar project.

Because there will be no subsurface discharge from the project and secondary containment of any spilled materials, there is little potential for the Palomar project to cause or contribute to cumulative impacts to the groundwater resources beneath the site.

5.4.6 LORS Compliance

Design, construction and operation of the proposed project including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to water resources. The applicable LORS are discussed in Section 6.5.4.

5.4.7 Involved Agencies and Agency Contacts

Agencies and agency contacts relevant to water resources for the Palomar project are provided in Table 5.4-7.

Table 5.4-7 Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
San Diego Regional Water Quality Control Board (RWQCB) 9771 Clairemont Mesa Blvd., Suite A San Diego, CA 92124	Construction Jane Ledford (858) 467-3272 Industrial Gloria Fulton (858) 467-2959	Stormwater Permits for General Construction Activity and Industrial Activities.
City of Escondido Industrial Waste Program 1521 South Hale Avenue Escondido, CA 92029-3052	Fred Rowlen Ralph Hornbeck (760) 839-6282	Industrial User Discharge Permit for industrial wastewater discharge
City of Escondido, Public Works Department 201 N. Broadway Escondido, CA 92025	Cynthia Ferguson-Salvatti (760) 839-4651	Pipeline interconnection, water contracting issues.

5.4.8 Permits Required and Permit Schedule

Agency-required permits related to water resources are summarized below in Table 5.4-8. Agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 5.4-8 Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Grading/Erosion Control Permit	30 days prior to start of construction activities.
Industrial User Discharge Permit; Management Plan for Toxic and Prohibited Organic Chemicals; Baseline Monitoring Report	120 days prior to start of operations
NPDES General Permit for Storm Water Discharges Associated with Construction Activities	Submit Notice of Intent 2 days prior to start of construction.
NPDES General Permit for Storm Water Discharges Associated with Industrial Activities	Submit Notice of Intent 3 days prior to start of operation.

5.4.9 References

California Department of Water Resources. 1979. Evaporation from Water Surfaces in California. Bulletin 73-79.

California Department of Water Resources. 1998. Duration-Recurrence Precipitation Data.

City of Escondido. 2000. Hale Avenue Resource Recovery Facility Phase II Construction Facts.

Escondido Creek Conservancy. 2000. www.escondidocreek.org.

Giesick, Robert. May 2001. Personal Communication (discussion with J. Breese). County of San Diego, Department of Environmental Health.

GEOCON. 2001. Preliminary Geotechnical Study – Quail Hills Escondido, California.

Hornbeck, David. 1983. California Patterns - A Geographical and Historical Atlas. Mayfield Publishing Company. Palo Alto, California.

Rowlen, Fred. May 2001. Personal Communication. (discussion with J. Breese). City of Escondido Industrial Waste Program.

San Diego Regional Water Quality Control Board. 1994. Water Quality Control Plan for the San Diego Basin.

San Diego County Water Authority. 2001. www.sdcwa.org.

U. S. Soil Conservation Service and Forest Service. 1973. Soil Survey, San Diego Area, California.