SUBSECTION 8.14

Water Resources

8.14 Water Resources

8.14.1 Introduction

This subsection evaluates the effect of the San Francisco Electric Reliability Project (SFERP) on water resources. Subsection 8.14.2 provides a brief introduction to San Francisco's combined sewer system, which is atypical in California and an important consideration in this subsection. Subsection 8.14.3 presents the LORS compliance strategy. Subsection 8.14.4 describes the affected environment. Subsection 8.14.5 presents the project's proposed water usage and wastewater disposal characteristics, and Subsection 8.14.6 discusses the project's effects on water resources. Mitigation is discussed in Subsection 8.14.7. Subsection 8.14.8 provides the proposed monitoring plans and compliance verification procedures. Subsection 8.14.9 discusses cumulative impacts. Subsection 8.14.10 lists the permits required and agency contacts. Subsection 8.14.11 provides the references consulted in preparing this subsection.

Water resources evaluated for potential effects by the proposed SFERP include the following, and are addressed in this subsection:

- Effects on water supply
- Effects on surface waters
- Effect of stormwater
- Effects on groundwater recharge, degradation, or depletion
- Effects on flooding

8.14.2 Background

The City of San Francisco (City) is the only major municipality in California with a combined sewer system, and it serves nearly the entire City. This means that throughout the City, domestic sewage, industrial wastewater, and stormwater runoff are collected in the same set of pipes where they are combined and transported to the same wastewater treatment facilities for treatment and disposal. Most other communities in California have a separated sewer system: one system for domestic sewage and industrial wastewater and another system for stormwater.

The City combined sewer system is subject to the regulations of, and permitted under, the National Pollutant Discharge Elimination System (NPDES) program of the Clean Water Act for the treatment and disposal of the combined wastewater. However, during wet weather, the NPDES permit indicates that the City's combined sewer system facilities are regulated under the Federal Combined Sewer Overflow Control Policy, and not the same regulations for publicly-owned treatment works or for stormwater as other California municipalities with separate systems. The City's combined sewer system is further described in Subsection 8.14.4, and federal, state, and local regulations applicable to the SFERP are discussed in Subsection 8.14.3.

8.14.3 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to water resources aspects of the SFERP are discussed in this subsection and summarized in Table 8.14-1.

TABLE 8.14-1
Laws, Ordinances, Regulations, and Standards Applicable to SFERP Water Resources

LORS	Applicability	How Conformance Is Achieved
Federal		
Clean Water Act (CWA) / Water Pollution Control Act. P.L. 92-500, 1972; amended by Water Quality Act of 1987, P.L. 100-4 (33 USC 466 et seq.); National Pollutant Discharge Elimination System (NPDES) (CWA, Section 402); Toxic and Pretreatment Effluent Standards (CWA, Section 307)	Prohibits discharge of pollutants to receiving waters unless the discharge is in compliance with an NPDES permit. Applies to all wastewater discharges, including industrial wastewater, stormwater runoff and dewatering, during both construction and operation. Sets forth pretreatment requirements for the industrial discharges into publicly-owned treatment works.	Compliance with state implementation requirements as indicated by the California Regional Water Quality Control Board, San Francisco Bay Region (see below under State).
State		
Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code, Sections 13000-14050), including Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)	Implements and enforces the federal NPDES permit program through conformance with beneficial uses and water quality objectives in the Basin Plan as well as conformance with any applicable Total Maximum Daily Load requirements and industrial pretreatment requirements.	Operational discharges of industrial and sanitary wastewater streams are conveyed to the City's combined sewer system for treatment and disposal; discharges from the City's combined sewer system to the Bay are regulated under an existing NPDES permit. Operational discharges of stormwater runoff from the site are conveyed to the City's combined sewer system for treatment and disposal; discharges to the Bay from the City's combined sewer system are regulated under an existing NPDES permit. Stormwater discharges directly to the Bay and into the Port's storm drainage system will take place from the staging area and prior to the installation of the onsite drainage system. These discharges would be subject to the Port's current NPDES permit conditions.
California Environmental Quality Act (CEQA) (Public Resources Code, 21000 et seq. and Guidelines, 14 Cal. Code Reg. 15000 et. seq.)	Identifies potential impacts to water quality and hydrology and mitigation measures for those impacts; discloses this information to decision makers and the public.	The California Energy Commission (CEC) Final Staff Assessments is the CEQA-equivalent documents under the Warren-Alquist Act.
California Water Code §13550 et seq. and State Water Resources Control Board Resolution 75-58	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.	CA Water Code §13550 et seq. provides that use of potable water for specified uses is a prohibited waste of water resources when recycled water is currently available, as defined in that section. The SFERP proposes to use recycled water for process and cooling water and is, therefore, in conformance with these code sections. Res. No. 75-58 applies only to use of inland surface waters for cooling; but because the SFERP would use recycled water for cooling, this does not apply to this project.
Title 22 of the CCR (Division 4, Chapter 15)	Sets forth requirements for treatment and quality of recycled water for cooling.	Recycled water will be disinfected tertiary recycled water, in conformance with Title 22 requirements.

TABLE 8.14-1
Laws, Ordinances, Regulations, and Standards Applicable to SFERP Water Resources

LORS	Applicability	How Conformance Is Achieved
Local		
San Francisco Public Works Code, Article 4.1, Industrial Waste	Regulates all discharges to the City's combined sewer system, including industrial wastewater, stormwater runoff, and dewatering effluent.	The Applicant will comply with Article 4.1 for all discharges to the combined sewer system and will obtain a Class I discharge permit from the City's to discharge industrial wastewater to the combined sewer system. The Applicant will comply with all permit conditions, including the following: discharge limitations, pretreatment requirements, peak flow restrictions, dewatering discharges, payment of fees, and monitoring and reporting requirements.
San Francisco Department of Public Works Order No. 158170	Specifies industrial waste discharge limits on wastewater discharges into the City's sewer system.	Compliance with the Class I discharge permit from the City's pursuant to Article 4.1 of the Public Works Code.
Reclaimed Water Use Ordinance Article 22 to Part II, Chapter X of the San Francisco Public Works Code	Requires installation of dual plumbing and use of recycled water, when it is available, for projects over 40,000 square feet and within the reclaimed water area.	SFERP is within the designated reclaimed water area and would involve over 40,000 square feet of new construction. The proposed SFERP includes dual plumbing and will use recycled water for process and cooling water, and is therefore in conformance with the Ordinance.
Port of San Francisco Storm Water Management Plan (December 2003)	Requires development and implementation of a Construction Storm Water Pollution Prevention Plan for construction project sites greater than one acre. Requires new development to include post-construction storm controls to capture and treat or reuse stormwater to specific design criteria and include other post-construction measures (structural and operational) to minimize potential impact to stormwater runoff.	SFERP is within the area governed by the Port SWMP and would involve over one acre of new construction. The proposed SFERP design will discharge stormwater runoff to the combined sanitary sewer system and is therefore in conformance with the Port SWMP.

8.14.3.1 Federal Clean Water Act

The federal Clean Water Act and subsequent amendments, under the enforcement authority of the U.S. Environmental Protection Agency (USEPA), was established "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA established the National Pollutant Discharge Elimination System (NPDES) program to protect water quality of receiving waters. Under the Clean Water Act, Section 402, discharge of pollutants to receiving waters is prohibited unless the discharge is in compliance with an NPDES permit. In California, the USEPA has determined that the California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards have sufficient authority under state law to administer and enforce the federal NPDES permitting program. Surface and ground water in the project vicinity are under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). Discharges of wastewater and stormwater from SFERP would flow to the City's Southeast

Water Pollution Control Plant (SEWPCP), which operates under an NPDES permit issued by the SFBRWQCB.

In addition, Section 307 of the Clean Water Act requires pretreatment of industrial discharges into publicly-owned treatment works. Industrial discharges from the SFERP would be subject to these requirements, as implemented and enforced by the City under San Francisco Public Works Code, Article 4.1. Because the industrial pretreatment standards would be enforced by the City, they are discussed below under local regulations.

8.14.3.2 State

8.14.3.2.1 Porter-Cologne Water Quality Control Act and the Basin Plan. The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) governs the regulation of water quality within California and establishes the authority of the SWRCB and the nine Regional Boards. The SFBRWQCB established regulatory standards and objectives for water quality in the Bay in the *Water Quality Control Plan for the San Francisco Bay Basin*, commonly referred to as the "Basin Plan" (SFBRWQCB, 1995). The Basin Plan identifies existing and potential beneficial uses and provides numerical and narrative water quality objectives designed to protect those uses. The SFBRWQCB considers the beneficial uses of receiving water in establishing NPDES permit requirements in the San Francisco Bay region, including the permit covering the Southeast Water Pollution Control Plant.

The following existing beneficial uses are identified for San Francisco Bay, Central and Lower portions: ocean, commercial, and sport fishing; estuarine habitat; industrial service supply; fish migration; navigation; preservation of rare and endangered species; water-contact recreation; non-contact water recreation; shellfish harvesting; and wildlife habitat. Central San Francisco Bay also is identified as having industrial process supply and fish spawning as existing beneficial uses. No "potential" beneficial uses are identified for these waters (SFBRWQCB, 1995).

8.14.3.2.2 Clean Water Act, Section 303d, Impaired Water Bodies. In accordance with Section 303(d) of the Clean Water Act, each state must present the USEPA with a list of impaired water bodies. The SWRCB has listed San Francisco Bay, Central Bay portion, as an *impaired water body* for certain specified contaminants. Impaired waters are defined as those that do not meet water quality standards, even after point sources of pollution have implemented pollution control technology. The law requires the development of action plans, known as Total Maximum Daily Loads (TMDLs), to improve water quality of impaired water bodies. The TMDL is a calculation of the total amount of a pollutant that a water body can receive and still meet water quality objectives for a pollutant identified as causing impairment. The TMDL report allocates permissible quantities for discharge from specific sources. The pollutants that have been identified as causing impairment in San Francisco Bay, Central Bay portion, include chlordane, DDT, diazinon, dieldrin, dioxin compounds, furan compounds, mercury, polynuclear aromatic hydrocarbons, exotic species, polychlorinated biphenyls, and selenium (SFBRWQCB, 2003). The SFBRWQCB is developing reports for these pollutants, and subsequent amendments will be made to the Basin Plan to adopt the TMDL and all its related parts. Wastewater discharges from the SFERP would not result in the addition of any of these identified pollutants to the combined sewer system.

8.14.3.2.3 Industrial Stormwater NPDES Permit. The SWRCB implements regulations under the federal Clean Water Act requiring that point source discharges (a point source discharge of stormwater is a flow of rainfall runoff in some kind of discrete conveyance such as a pipe, ditch, channel, or swale) of stormwater associated with industrial activity that discharge either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit (SWRCB, 1997). The SWRCB has issued Waste Discharge Requirements (WDRs) for discharges of stormwater associated with industrial activities, such as the proposed project, and excluding construction activities. After the completion of construction, the proposed site would be graded to direct stormwater runoff directly to the City combined sewer system. Therefore, this permit would not apply to the project.

Stormwater discharges from the SFERP site to the City combined sewer system would be subject to the requirements of the City and must be in compliance with the nine minimum controls described in the Federal Combined Sewer Overflow Control Policy (CSO Policy) and specified in the City's NPDES permit. The minimum controls include development and implementation of a pollution prevention program that would be applicable to the SFERP. The City's pollution prevention program includes best management practices to minimize the amount of pollutants carried by stormwater into the combined sewer system.

8.14.3.2.4 Construction Stormwater NPDES Permit. The federal Clean Water Act effectively prohibits discharges of stormwater from construction sites unless the discharge is in compliance with an NPDES permit. The SWRCB is the permitting authority in California and has adopted a statewide General Permit for Stormwater Discharges Associated with Construction Activity (General Construction Permit; SWRCB, 1999a) that applies to projects resulting in one or more acres of soil disturbance. The proposed project would result in disturbance of more than one acre of soil. Therefore, the project will require the preparation of a stormwater management plan that would specify site management activities to be implemented during site development, including a Risk Management and Safety Management Plans (RMP/SMP). These management activities will include construction stormwater best management practices (BMPs), dewatering runoff controls, and construction equipment decontamination. Stormwater pollution prevention measures during construction will include but not be limited to those established by the *Stormwater Best Management Practice Handbook for Construction* (CASQA, 2003). Dewatering controls will include but may not be limited to containing dewatered water in a baker tank and installing erosion control measures to contain sediment from accidental spills or releases of dewatered water. Construction equipment will be cleaned by dry or wet methods as needed to prevent tracking soils offsite.

The stormwater management plan must be reviewed and approved by the City and the Port of San Francisco (Port) prior to implementation, and the City will conduct periodic inspections to ensure compliance with the erosion and sediment control plan (Lee, 2004).

8.14.3.2.5 California Environmental Quality Act. The California Environmental Quality Act (CEQA) requires that projects carried out or approved by California public agencies be evaluated for their potential to cause adverse environmental impacts, and that impacts be mitigated to the extent feasible. The CEQA evaluation of impacts must cover all aspects of the environment, including water resources, hydrology and water quality. CEQA assessment of water resource impacts includes analysis of water quality standards or waste discharge requirements, depletion of groundwater supplies or recharge; alteration of

drainage patterns; increase in runoff; degradation of water quality of surface or ground waters; and flooding hazard. The California Energy Commission's (CEC's) Final Staff Assessments is the CEQA-equivalent document under the Warren-Alquist Act.

8.14.3.2.6 California Water Code Sections 13550, 13551, 461, and SWRCB Resolution No. 75-58. These water code sections and policy statements encourage the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply. California Water Code 13550, et seq., provides that use of potable water for specified uses is a prohibited waste of water resources when recycled water is available. The SFERP proposes to use recycled water for process and cooling water, as well as for dual plumbing, and therefore is in conformance with these code sections. State Water Resources Control Board Resolution 75-58 sets forth the state's water quality control policy on the use and disposal of inland waters used for power plant cooling; this resolution applies only to uses of inland surface waters for cooling water. The SFERP proposes to use recycled water, not inland surface waters. Therefore, this resolution does not apply to the SFERP.

8.14.3.2.7 Title 22 of the California Code of Regulations. Title 22 addresses the treatment and use of recycled water; in particular Section 60306 sets forth the criteria for the use of recycled water for cooling. Such cooling water is defined as disinfected tertiary recycled water in Section 60401.230. The recycled water produced for this project would meet all Title 22 requirements. Therefore, the SFERP would be in conformance with this regulation.

8.14.3.3 Local Policies—City and County of San Francisco

8.14.3.3.1 Article 4.1 of the San Francisco Public Works Code and San Francisco Department of Public Works Order No. 158170. The Clean Water Act requires that publicly-owned treatment works regulate the discharge of industrial wastes into a sewer system subject to an NPDES permit. Accordingly, the City has adopted detailed permit requirements for industrial dischargers. The discharge of any wastewater to the City's combined sewer system would be subject to the requirements of Article 4.1 of the San Francisco Public Works Code, which regulates the quantity and quality of discharges to the combined sewer system. Order No. 158170 of the San Francisco Public Works Department provides additional industrial waste discharge limits to augment those listed in Article 4.1 of the San Francisco Public Works Code. In accordance with these regulations, the discharge would be required to meet the numeric limitations specified in Table 8.14-2.

TABLE 8.14-2
Limitations for Industrial Discharges to San Francisco Combined Sewer System

Parameter	Unit	Discharge Limit
pH[a,b]	standard units	6.0 to 9.5
Dissolved sulfides[a,b]	milligram per liter	0.5
Temperature[a,b]	degrees Fahrenheit	125
Hydrocarbon oil and grease[a,b]	milligram per liter	100
Total recoverable oil and grease[a,c]	milligram per liter	300
Arsenic, as total[d,e]	milligram per liter	4.0
Cadmium, as total[d,e]	milligram per liter	0.5
Chromium, as total[d,e]	milligram per liter	5.0

TABLE 8.14-2
Limitations for Industrial Discharges to San Francisco Combined Sewer System

Parameter	Unit	Discharge Limit
Copper, as total[d,e]	milligram per liter	4.0
Lead, as total[d,e]	milligram per liter	1.5
Mercury, as total[d,e]	milligram per liter	0.05
Nickel, as total[d,e]	milligram per liter	2.0
Silver, as total[d,e]	milligram per liter	0.6
Zinc, as total[d,e]	milligram per liter	7.0
Phenols[d,e]	milligram per liter	23.0
Cyanide, as total[d,e]	milligram per liter	1.0

Notes:
[a] Article 4.1 of the San Francisco Public Works Code, Section 123.
[b] Limitation based on any grab sample. Wastewater shall not at any time exceed the specified numerical limitation.
[c] The limitation for total recoverable oil and grease is based on a composite sample of wastewater discharge generated over a production week.
[d] City and County of San Francisco, Department of Public Works Order No. 158170.
[e] Limit based on any 24-hour representative, composite sample.

In addition to the numeric requirements of Table 8.14-2, Article 4.1 also prohibits the discharge of other materials that could obstruct or damage the sewer system; cause a nuisance; interfere with the operation, maintenance, or repair of the sewer system; or directly or indirectly cause a violation of the City's NPDES permit.

In accordance with Article 4.1, the SFERP would be required to obtain a Class I discharge permit from the City. The Class I permit would specify the detailed project-specific requirements applicable to the SFERP, including pretreatment standards, flow restrictions (e.g., peak discharges, timing of discharges), and sampling, monitoring, and reporting requirements. The Class I permit may also require the control of stormwater runoff that enters the combined sewer system. The permit would be issued for a fixed time period, not to exceed 5 years. Reports, including a description of any violations, remedial measures taken, or any process changes, are required to be submitted to the City on a quarterly basis.

Pretreatment standards tier from federal (Clean Water Act) requirements, contained in 40 CFR Part 423 (Steam Electric Power Generating Point Source Category). The specific section applicable to new sources is Section 423.15. New source performance standards for industrial pretreatment include limitations on pH, prohibition of discharges containing polychlorinated biphenyl compounds, and numeric limits for low-volume waste and chemical metal cleaning waste. The regulations also include limitations for priority pollutants that are added to the process for cooling tower maintenance. No products containing priority pollutants are proposed to be incorporated into the process for cooling tower maintenance.

Numeric pretreatment limits are established for low-volume waste and chemical metal cleaning waste. Low volume waste, if from one source, is wastewater from all sources except those for which specific limitations are otherwise established. Low volume wastes include, but are not limited to, wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory

and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastewaters are not included. The effluent limitations specified in Table 8.14-3 are applicable to discharge of low volume waste from the SFERP.

"Chemical metal cleaning waste" means any wastewater resulting from cleaning any metal process equipment (with or without chemical cleaning compounds). The effluent limitations specified in Table 8.14-4 are applicable to discharges of chemical metal cleaning wastes.

TABLE 8.14-3
Effluent Limitations Applicable to Discharges of Low Volume Waste

Pollutant	Daily Maximum (mg/L)	Maximum 30-day Average (mg/L)
Total Suspended Solids (TSS)	100.0	30.0
Oil and Grease	20.0	15.0

TABLE 8.14-4
Effluent Limitations Applicable to Discharges of Chemical Metal Cleaning Wastes

Pollutant	Daily Maximum (mg/L)	Maximum 30-day Average (mg/L)
Total Suspended Solids (TSS)	100.0	30.0
Oil and Grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

Article 4.1 also requires a permit from the City for discharge of groundwater or water from dewatering facilities into the combined sewer system. This permit would be applicable to the SFERP if dewatering is required during construction. The permit for groundwater discharge would contain appropriate discharge standards and may require installation of meters to measure the volume of the discharge.

8.14.3.3.2 Reclaimed Water Use Ordinance. The City has adopted the Reclaimed Water Use Ordinance (Ordinances 390-91 and 391-91, approved November 7, 1991), which added Article 22 to Part II, Chapter X of the San Francisco Municipal Code (Public Works Code). If a non-residential project is within a reclaimed water area, is over 40,000 square feet, and requires a site permit, building permit, or other authorization, the ordinance mandates the installation of dual plumbing and the use of recycled water, when it is available. Dual plumbing is to be designed to service uses that could employ recycled water (e.g., toilets). The ordinance also requires that owners, operators, or managers of all such development projects register their project with the San Francisco Water Department. The Water Department will then issue a certificate of intention to use reclaimed water, and reclaimed water shall be used unless the Water Department issues a certificate exempting compliance because (1) reclaimed water is not available, (2) an alternative water supply is to be used, or

(3) the sponsor has shown that the use of reclaimed water is not appropriate. The appropriate use of reclaimed water would reduce the project's potable water consumption.

The proposed project is located within a designated reclaimed water area and would involve development of approximately 4.0 acres (174,240 square feet), exceeding the 40,000-square-foot threshold. Therefore, the SFERP would be subject to this ordinance and dual plumbing will be included in the plant design. Conformance will be achieved through use of recycled water, to be available to the SFERP upon startup of operations.

8.14.3.3.3 San Francisco General Plan Policies. Two elements of the San Francisco General Plan–the Environmental Protection and the Community Safety Elements—include policies related to water resources relevant to the SFERP. The Environmental Protection Element (1995) addresses the impact of urbanization on the natural environment, and the Community Safety Element (1997) aims to reduce future loss of life, injuries, property loss, environmental damage, and social and economic disruption from natural disasters. In addition, the project site is located within the Central Waterfront Specific Area, which has specific policies based on the geographic location within the City. Table 8.14-5 summarizes the applicable water resource goals and policies from the San Francisco General Plan and the project's conformance with those goals and policies.

TABLE 8.14-5
San Francisco General Plan Water Resources Policies Applicable to the SFERP

Element	Goal/Policy	Conformance
Environmental Protection	Policy 3.1: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay, Ocean, and Shorelines.	Obtaining a City Class I permit and conforming to requirements of Article 4.1 of the San Francisco Public Works Code and San Francisco Department of Public Works Order No. 158170 would protect water quality of the Bay.
	Policy 3.3: Implement plans to improve sewage treatment and halt pollution of the Bay and Ocean.	Same as above.
	Policy 5.2: Exercise controls over development to correspond to the capabilities of the water supply and distribution system.	Use of recycled water for industrial process and cooling water as well as for dual plumbing would minimize additional demands on the water supply and distribution system.
	Objective 6: Conserve and protect the fresh water resource.	Use of recycled water for industrial process and cooling water as well as for dual plumbing would conserve potable water for domestic uses.
	Policy 6.2: Encourage and promote research on the necessity and feasibility of water reclamation.	Use of recycled water for industrial process and cooling water as well as for dual plumbing would demonstrate to other industries the feasibility of water reclamation and encourage other industries to consider its use.
Community Safety Element	Policy 2.9: Consider information about geologic hazards whenever City decisions that will influence land use, building density, building configurations or infrastructure are made.	Information regarding potential for flooding or inundation from tsunami at the project site for the SFERP is considered in this AFC.

TABLE 8.14-5
San Francisco General Plan Water Resources Policies Applicable to the SFERP

Element	Goal/Policy	Conformance
Central Waterfront Specific Area Plan	Objective 9: Provide public access and recreational opportunities along the shoreline; and Policy 9.1: Maintain and improve the quality of existing shoreline recreational areas at China Basin Channel, Agua Vista Park, Warm Water Cove and Islais Creek.	The SFERP would use recycled water for industrial process and cooling water rather than Bay water, thereby precluding the need for infrastructure development along the shoreline.

Source: San Francisco Planning Department, 1996. San Francisco General Plan. Environmental Protection Element (1997), Community Safety Element (1995), and Central Waterfront Specific Area Plan (1998).

8.14.3.3.4 Municipal Stormwater NPDES Permit/Port Stormwater Management Plan. The Federal CWA amendments of 1987 regulate the management of stormwater runoff from municipalities as well as specific industrial facilities. Recent state and federal regulations promulgated to implement those amendments require that designated municipalities obtain coverage under a Statewide General Permit for Municipal Stormwater Discharge. The Port of San Francisco developed the "Port of San Francisco Storm Water Management Plan" (SWMP) (Port of San Francisco, 2003) in compliance with the Statewide General Permit. The Port SWMP addresses the six minimum control measures required under the Statewide General Permit, the following two of which apply to the proposed project:

1. Construction site stormwater runoff control. The Port SWMP requires development and implementation of a construction SWPPP for all construction sites greater than one acre. The Construction SWPPP must include but not be limited to those established by the "Stormwater Best Management Practice Handbook" (CASQA, 2003).

2. Post-construction stormwater management in new development. The Port SWMP specifies that new development projects that disturb one or more acres incorporate structural and non-structural controls to minimize water quality impacts, including design standards requiring capture and treatment of stormwater as specified by the General Permit.

As part of its planning for development and redevelopment of the Southern Waterfront Area of the Port's jurisdiction (Pier 70 – Pier 96), the Port completed a study of the potential to develop an area-wide stormwater management strategy for the southern waterfront. This "Storm Water Management Study for the Port of San Francisco Southern Waterfront" (SWSMS) (Treadwell & Rollo and Watershed Resources Collaboration Group, 2003) focused on a natural systems-based approach, including use of bioretention areas, swales, and seasonal wetlands along with more traditional stormwater management approaches such as smart site design and engineered treatment systems. The structural and non-structural stormwater management practices and approaches to site design addressed in the SWSMS are consistent with the requirements of Statewide General Permit for Municipal Storm Water, and the SWSMS is a key component of the Port's post-construction controls strategy. The Port uses the SWSMS as a reference when reviewing proposed development along the Southern Waterfront, and often conditions new development subject to applicable recommendations of the SWSMS.

8.14.4 Affected Environment—Hydrologic Setting

8.14.4.1 Water Features, Rainfall, and Drainage

The SFERP site is located on a four acre property close to Pier 80, near the shoreline and directly adjacent to San Francisco Bay. The major water feature in the project vicinity, in addition to San Francisco Bay itself, is Islais Creek Channel, a tidal inlet of the Bay located about 0.2 mile south of the project site. The channel was originally the outflow of Islais Creek. Islais Creek was filled with blasted rock during the 1940s and was one of the last creeks in the City to be filled. Urban development has resulted in culverting the creek and diverting natural creek flows and drainage to the combined sewer system. Average annual precipitation in this part of San Francisco is about 21 inches, with nearly all annual rainfall occurring from November through April. Figure 8.14-1 (figures are located at the end of this subsection) shows the water features in the project vicinity.

Nearly all freshwater flow to the Bay and stormwater runoff from the east side of San Francisco has been diverted to the City's combined sewer system. The 4.0-acre project site is currently unpaved, and all drainage from the site percolates into the ground or sheet flows off the site to the Port's storm drainage system or directly into San Francisco Bay. Upon project completion, all storm drainage would flow to the City's combined sewer system located south of the site along Cesar Chavez Street. As described earlier, the City is almost entirely served by a combined sewer system, which collects and transports both wastewater (sewage and industrial discharges) and stormwater runoff in the same set of pipes. During dry weather, wastewater flows consist mainly of municipal (also referred to as sanitary sewage) and industrial wastewater. Dry weather flows to the combined sewer system along the east side of the City are transported to the Southeast Water Pollution Control Plant (SEWPCP) on Phelps Street, about 0.5 mile southwest of the project site, for treatment and subsequent discharge to the Bay through the deep water outfall at Pier 80. During wet weather, the volume of wastewater in the City's combined sewer system greatly increases when stormwater runoff mixes with the municipal and industrial wastewater. The wet weather flows are either treated at the SEWPCP or wet weather treatment facilities, or retained in storage and transport boxes for later treatment. Treated wastewater is discharged to the Bay through various outfalls and overflow structures in compliance with an NPDES permit from the SFBRWQCB.

Because of the large variation in volume of wastewater discharged to the combined sewer system, there are variations in the treatment and disposal of the wastewater depending on the volume. During dry weather, when wastewater flow volumes are low, wastewater is treated to a secondary level at the SEWPCP and discharged to the Bay through the deep water Pier 80 Outfall (secondary treatment involves treatment of wastewater or sewage of organic matter using biological and chemical processes). This is a higher level of treatment than primary treatment, which is removal of floating and settleable solids using physical operations such as screening and sedimentation. Secondary treatment is less intensive than tertiary treatment, in which additional chemical and biological treatment is used to remove pathogens, generally for recycled [non-potable] water uses. Annual average wastewater flow during dry weather is about 68 million gallons per day (mgd). During wet weather, the SEWPCP provides secondary treatment to increased wet weather flows up to the capacity of 150 mgd, and can also treat up to an additional 100 mgd to a primary treatment standard. Wet weather discharges in the project area occur through the Pier 80 Outfall or the Quint Street Outfall (on the south bank of Islais Creek one block west of the Third Street bridge).

During periods of extreme wet weather, discharges to the Bay also occur as combined sewer overflows (CSOs) at CSO structures located all along the City's waterfront. Three CSO structures are located south of the project site at the western head end of Islais Creek, and two CSO structures are located just north of the project site at 20th and 22nd streets. The combined sewer system is designed such that discharges from the CSO structures in this part of the City occur on average about 10 times per year. Discharges through the CSO structures, consisting of about 6 percent sewage and 94 percent stormwater, undergo flow-through treatment prior to discharge to the Bay to remove settleable solids and floatable materials (approximating primary treatment).

8.14.4.2 Potable Water Source

Potable water delivered to San Francisco is from the Hetch Hetchy water supply system and provided by the San Francisco Public Utilities Commission (SFPUC). The raw water source originates outside the City, with about 85 percent originating from the Tuolumne River watershed in the Sierra Nevada and about 15 percent from local Bay area watersheds. Groundwater in the project area has not been developed for domestic uses and may not be suitable for potable purposes.

8.14.4.3 Surface Waters

There are no surface waters or wetlands within the project site boundaries, and no stream crossings would be required. San Francisco Bay, including its associated inlets, is the major water feature closest to the project area. Between Piers 72 and 80, about 1,000 feet north of the site, Warm Water Cove Park is a public open space area next to the Bay where sport fishing, water-contact recreation, and non-contact water recreation opportunities occur depending on tidal water levels. The Islais Creek Channel is used for small-vessel boating and other non-contact water recreation. At the mouth of Islais Creek on the south side, there is an existing wetland area with wildlife habitat (San Francisco Planning Department, 2001).

Historically, Islais Creek was the confluence of several small creeks (one of which is still extant in Glen Canyon) that carried runoff from the southeastern portion of San Francisco and entered the Bay just west of the western end of the existing tidal inlet. Urban development and alterations to the drainage system resulted in culverting of Islais Creek and channeling most of the stream flow from Islais Creek into the City's combined sewer system. Currently, surface inflow to Islais Creek Channel occurs during the rainy season from treated wastewater discharged from the combined sewer system through the Quint Street outfall and two CSO structures along the creek channel as well as from direct stormwater runoff from areas adjacent to the creek. The western portion of Islais Creek (west of Third Street) is listed as a Toxic Hot Spot because of impacts on aquatic life due to contaminated sediment (SWRCB, 1999b). Islais Creek is also listed as an impaired water body due to sediment contaminated with ammonia, chlordane, dieldrin, edosulfan sulfate, hydrogen sulfide, polynuclear aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs), with the source of impairment attributed to industrial point sources and combined sewer overflow (RWQCB, 2003). The City has not accepted the listing findings and has objected to the accuracy of the data and conclusions used by the SWRCB and RWQCB. Discussions between the City and RWQCB regarding these assessments and remedial activities are ongoing.

8.14.4.4 Groundwater

Groundwater underlying the project area is part of the Islais Creek groundwater basin. This basin covers approximately 5,600 acres that historically were part of the Islais Creek drainage area, extending roughly from Twin Peaks to the Bay. The alluvial thickness ranges from zero feet where bedrock is exposed to 200 feet near the Bay. Unconsolidated sediments are made up of a combination of Colma Formation sediments and undifferentiated alluvial deposits. Bay mud occurs in a large portion of the basin, and artificial fill has been placed over the Bay margin. In general, the water table is shallow and the groundwater flow direction is from the bedrock ridges towards the valley center and then toward the Bay (San Francisco Planning Department, 1997).

Historically, there were numerous wells developed in this basin for irrigation and domestic, uses, but currently there are no groundwater wells used for potable water in the project area. The groundwater quality in this basin is generally unknown, but in the industrial area east of Highway 101, there is a high likelihood that groundwater quality has been affected by current and former industrial land uses.

The project site is located on fill material underlain by Bay Mud. At the project site, depth to groundwater is approximately 5 to 10 feet below the ground surface (AGS, Inc., 1999).

8.14.4.5 Flooding Potential

The project site is located at an elevation of approximately 13 to 15 feet above mean sea level (North American Vertical Datum, 1988) and roughly 500 feet (average) from the shoreline. The highest tide ever recorded in the project area is approximately 9.25 feet above mean sea level, measured using the North American Vertical Datum, 1988 (AGS, Inc., 1999). Based on this, the potential for flooding at the project site is low. This is consistent with the San Francisco Community Safety Element, which indicates that there are no areas prone to surface flooding in San Francisco (San Francisco Planning Department, 1995).

Tsunamis are large waves in the ocean generated by earthquakes, coastal or submarine landslides, or volcanoes. Damaging tsunamis are not common on the California coast. Most California tsunamis are associated with distant earthquakes (most likely those in Alaska or South America), not with local earthquakes. Devastating tsunamis have not occurred in historic times in the Bay area. Because of the lack of reliable information about the kind of tsunami runups that have occurred in the prehistoric past, there is considerable uncertainty over the extent of tsunami runup that could occur. There is ongoing research into the potential tsunami run-up in California. The project site is located within the area of potential tsunami inundation identified in the San Francisco General Plan Community Safety Element. The tsunami map indicates inundation areas from a 20-foot tsunami (wave height) at the Golden Gate, the maximum probable tsunami expected to occur once every 100 years, on average (San Francisco Planning Department, 1995). Although seiches and tsunamis can occur and cause tidal surges in San Francisco Bay, the Bay greatly attenuates tsunamis that might reach the Golden Gate area and these events are extremely rare.

8.14.5 Project Water Usage and Wastewater Disposal Characteristics

8.14.5.1 Water Usage and Sources

This subsection characterizes the sources and quality of water needed for power generation and other operations at SFERP. Average and maximum daily and annual water demand are provided in Table 8.14-6.

TABLE 8.14-6
Daily and Annual Water Usage for SFERP Operations

Water Use	Water Source	Daily Use (gpm[a])		Annual Use (AFY[b])	
		Average	Maximum	Average	Maximum
Process and Cooling Water	Disinfected tertiary recycled water, supplied by the City, SFPUC	239	296	132	163
Equipment Wash Water	Disinfected tertiary recycled water, supplied by the City, SFPUC	1	2	1.6	3.2
Potable Water Service	Hetch Hetchy water supply system	1	2	1.6	3.2
Fire Protection	The City's Auxiliary Water Supply System or Hetch Hetchy water supply system	0	1,500	0	0

[a] gpm = gallons per minute
[b] AFY = acre-feet per year

8.14.5.1.1 Process and Cooling Water — Recycled Water Supply. Water for the SFERP for process and cooling water, equipment wash water, and the dual plumbing system (toilets) would be recycled water to be produced onsite at a new water treatment system included as part of the project design. Details of the SFERP water requirements, plant water cycle, and process makeup water treatment are discussed in Section 2.0, Project Description.

The City will provide untreated process water (free of floatable matter and large debris) from a water pumping station to be constructed on Marin Street near Cesar Chavez, about 0.8 mile from the site. A new pipeline will be installed along Marin, Mississippi, and Cesar Chavez streets to convey the process water to a new recycled water treatment system located on the project site (see Figure 2-1).

The onsite treatment system will be designed to produce Title 22-quality recycled water, with the onsite treatment system providing primary, secondary, and tertiary treatment plus disinfection either by an ultraviolet or chlorination system. The primary treatment will be accomplished by a traveling band screen, and the secondary treatment will be achieved in an aerobic tank to ensure proper biological activity. After the appropriate hydraulic retention time, the water will flow into the tertiary treatment system. The tertiary treatment and filtering will be achieved by incorporation of a Membrane BioReactor. The recycled water will then be disinfected and pumped to the recycled water storage tank for use within the plant for all non-potable water applications. This disinfected, tertiary treated water will meet the Title 22 criteria for recycled water.

The Title 22 recycled water will then be divided into supply for the cooling towers and supply for NO_x suppression injection and compressor evaporative cooling. Cooling water treatment may require the addition of chemicals such as a pH control agent (acid or caustic), a mineral scale dispersant (i.e., polyacrylate polymer), a corrosion inhibitor (phosphate based), and a biocide (hypochlorite or equivalent). The water to be used for NO_x suppression injection and compressor evaporative cooling will be further treated, beginning with a reverse osmosis system followed by an electrodeionization system.

8.14.5.1.2 Alternative Cooling Water Sources. The SWRCB Policy 75-58 specifies that to protect water quality and quantity, water rights applications for cooling water for power plants can only be approved if other sources of water are not feasible. This resolution applies to the use of inland surface waters for cooling purposes. Since the project proposes to use recycled water and

is not applying for new water rights, Policy 75-58 is not applicable to this project. However, the SFERP use of recycled water is in conformance with the intent of the resolution. For purposes of completeness of the analysis, the following is a discussion of the alternative sources of cooling water listed in Policy 75-58 (in order of preference) to demonstrate the infeasibility of other sources.

1. **Wastewater being discharged to the ocean**. The SFERP proposes to use recycled water that would divert raw wastewater that would otherwise be treated at the Southeast Water Pollution Control Plant and then discharged to San Francisco Bay, an estuarine water body. While an alternative source of recycled water could be the Oceanside Water Pollution Control Plant, which discharges treated wastewater to the ocean, use of this source would require over 7 miles of pipeline to the SFERP site. Therefore, this is not a practical alternative due to the availability of a closer wastewater source.

2. **Ocean**. The SFERP site is adjacent to San Francisco Bay and about 7 miles from the Pacific Ocean; therefore, use of ocean water is not practical due to the availability of a closer water source of equivalent quality to ocean water. Use of Bay water is discussed below.

3. **Brackish water from natural sources or irrigation return flow**. There are no sources of agricultural irrigation return flow in the vicinity of the project site. Bay water is a potential brackish water source that could be used for cooling water, but its use would result in potential impacts to the aquatic habitat due to thermal effects of discharges to the Bay and construction of shoreline infrastructure. Use of Bay water would require an individual NPDES permit as well as permit approval from the Bay Conservation and Development Commission. Although technically feasible, this alternative was eliminated from consideration due to the availability of recycled water, which would have fewer potential impacts and fewer permitting requirements.

4. **Inland wastewater of low total dissolved solids (TDS)**. Regionally available sources of inland wastewater discharge to the San Francisco Bay; therefore, this alternative source is equivalent to the alternative source 3 above, use of Bay water.

5. **Other inland waters**. No other inland water sources, including groundwater, are available in sufficient quantity on a reliable basis.

8.14.5.1.3 Potable Water Supply. The project proposes to use potable water from the SFPUC's Hetch Hetchy Water Supply system for all potable plant service water, and fire protection needs and emergency backup cooling and process water supplies. The City's Auxiliary Water Supply System is also available for fire protection needs only. Projected demand for potable water uses at the SFERP is approximately 1,440 gallons per day, which is a negligible percentage of the current water demand in San Francisco of about 90 million gallons per day. Current and projected water supply from the Hetch Hetchy Water Supply System is adequate to meet this *de minimus* demand increase. Current and projected water supply meets all federal and state drinking water standards.

The SFERP will be supplied with potable water via a potable water pipeline located in 25th Street. A short (approximately 300-foot) supply pipeline will be connected to the SFERP. SFERP will use potable water for domestic uses, and as an emergency cooling and process backup water supply for the project.

8.14.5.2 Wastewater Discharges and Disposal

This subsection characterizes the volume and quality of wastewater that would be generated by the SFERP and method of disposal. Estimated average and maximum daily and annual wastewater discharge rates are provided in Table 8.14-7. In addition, this subsection also discusses runoff from storm events and runoff resulting from construction activities.

TABLE 8.14-7
Operational Wastewater Discharges from SFERP

Waste Discharge Stream	Discharge Location	Daily Discharge (gpm[a])		Annual Discharge (MGY[b])	
		Average	Maximum	Average	Maximum
Plant wastewater sump (discharge from process and cooling water, backwash water from ultra filters, and reject from reverse osmosis unit)	City combined sewer system	164	179	39.4	43.0
Wash water and plant drainage (e.g., equipment wash water, oil/water separator system, transfer pump water)	City combined sewer system	1	2	0.18	0.36
Sanitary sewage	City combined sewer system	1	2	0.18	0.36

[a] gpm = gallons per minute
[b] MGY = million gallons per year based on 4,000 hours of maximum annual output.

8.14.5.2.1 Industrial Wastewater Discharges. As discussed in Section 2.0, cooling tower blowdown will be discharged to the plant wastewater sump, as required to maintain the level of dissolved solids of the cooling water within acceptable ranges. Backwash water from ultra filters, reject water from the reverse osmosis unit and wash water and plant drainage will also be discharged to the wastewater sump. This wastewater, in addition to wash water from the primary treatment process unit of the recycled water treatment plant and sanitary sewage, would then be discharged to the combined sewer system as permitted under the discharge permit to be obtained from the City under Article 4.1 of the San Francisco Public Works Code. Table 8.14-8 summarizes estimated water quality of wastewater discharges from the wastewater sump to the combined sewer system, based on approximately 5 cycles of concentration of the cooling tower blowdown. Constituents of concern were selected based on the City's Class I permit requirements, the City's NPDES requirements for the SEWPCP, the approved 303(d) list, and Title 22 requirements.

TABLE 8.14-8
Estimated Wastewater Water Quality

Constituent	Reason for Inclusion of Parameter	Wastewater (mg/L except as noted)
4,4 DDE	NPDES, 303(d)	0.006 µg/L
Arsenic	NPDES, Class I permit	4.0 µg/L
Barium	NPDES	—
Biological Oxygen Demand	NPDES	<5
Cadmium	NPDES & Title 22, Class I permit	0.6 µg/L

TABLE 8.14-8
Estimated Wastewater Water Quality

Constituent	Reason for Inclusion of Parameter	Wastewater (mg/L except as noted)
Chromium	NPDES, Class I permit	2.6 µg/L
Copper	NPDES, Class I permit	29.2 µg/L
Cyanide	Class I Permit	N/A
Dieldrin	303(d)	0.004 µg/L
Dissolved sulfides	Class I permit	N/A
Hydrocarbon oil and grease	Class I Permit	<10
Lead	NPDES, Class I permit	5.0 µg/L
Mercury	NPDES, Title 22, 303(d), Class I permit	0.04 µg/L
Nickel	NPDES, Class I permit	7.8 µg/L
Phenols	Class I permit	N/A
pH, Ph units	NPDES & Class I Permit	6.0 – 9.0
Polynuclear aromatic hydrocarbons (PAHs)	NPDES, 303(d)	0.32 µg/L
Polychlorinated biphenyls	Title 22, 303(d)	0.20 µg/L
Selenium	NPDES, Title 22, 303(d)	0.10 µg/L
Silver	NPDES, Class I permit	2.0 µg/L
Total recoverable oil and grease	NPDES, Class I permit	<10
Total Suspended Solids	NPDES	<10
Zinc	NPDES, Class I permit	124 µg/L
Temperature (degrees Fahrenheit)	Class I Permit	70° F

8.14.5.2.2 Sanitary Sewage Disposal. Sanitary wastewater generated at SFERP, estimated at 1 gpm average and 2 gpm maximum, will also be discharged to the combined sewer system. This volume would be considered a *de minimus* increase in demand on the combined sewer system, not measurable within the overall dry weather flow (average 68 mgd) and well within the treatment, conveyance, and disposal capacities of the City's system.

8.14.5.2.3 Stormwater Runoff and Drainage. The existing site is unpaved, and stormwater runoff currently either percolates to the ground or sheet flows off the site directly to San Francisco Bay under the Port's SWMP and NPDES permit. After completion of construction, the proposed SFERP would result in 100 percent impervious surfaces, and stormwater would flow to the City's combined sewer system on Illinois Street. Assuming an annual average rainfall of about 21 inches and a 4.0-acre site, the annual average estimated stormwater contribution to the City's combined sewer system is approximately 2.2 million gallons per year (MGY) using the Rational Method and a runoff coefficient of 0.95. This volume of stormwater is considered negligible. The overall average yearly stormwater runoff is about 7,000 MGY on the east side of the City, where average annual dry weather flows are about 24,800 MGY. The SFERP would not result in a change in stormwater contribution from the site to the combined sewer system as compared with the existing conditions.

Peak runoff from the SFERP site would be approximately 11 cubic feet per second (cfs). Drainage infrastructure on Illinois Street is sized to accommodate the increase in stormwater discharges from the project area.

8.14.5.2.4 Construction Wastewater. As discussed in Subsection 8.12, Hazardous Waste, construction wastewater could include stormwater runoff, groundwater from dewatering, equipment washdown water, and water from pressure testing the gas lines. During construction, development and implementation of the site-specific Construction SWPPP and compliance with the requirements of the RMP/SMP will ensure that stormwater runoff and construction wastewater do not present a risk of impact to water quality. The Port's SWPPP and RMP/SMP provisions for site management activities to be implemented during site development require sediment and erosion controls to prevent runoff of site soil, using best management practices such as those presented in the "Stormwater Management Practice Handbook for Construction (CASQA, 2003). The RMP/SMP requires control of dewatered water and other construction wastewater (e.g. wash water from equipment decontamination), potentially including but not limited to collecting all construction wastewater in a baker tanks for subsequent disposal, and placement of erosion and runoff containment to prevent accidental discharge or release of construction wastewater.

8.14.5.3 Water Balance

The average and maximum volume of water used in the SFERP plant processes are shown in Figure 8.14.2, together with projected volumes of outflow of water either discharged to the City's combined sewer system or lost by evaporation.

8.14.6 Environmental Consequences— Project Effects on Water Resources

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

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

- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.

8.14.6.1 Effects on Drainage and Surface Waters

Implementation of the project would alter existing drainage patterns. The project site is currently undeveloped, and drainage percolates to the ground or sheet flows offsite. After the SFERP is constructed, the site would be paved and drainage would be conveyed to the City's combined sewer system. The SFERP drainage facilities would include catch basins on the west side of the site that would be connected to the stormwater system at the MUNI Metro East facility. Ultimate drainage of stormwater will be discharged to the combined sewer system, and be subsequently discharged to San Francisco Bay through an existing outfall or overflow structure pursuant to the City's NPDES permit. As discussed above, there would be no substantial change in the volume of combined flows to the City's combined sewer system.

During construction, the Applicant will be required to develop and submit for review to the Port of San Francisco and the City, Bureau of Environmental Regulation and Management, an erosion and sediment control plan to prevent the off-site migration of sediment and other pollutants and to reduce the effects of runoff from the construction site to offsite areas. The City and/or Port will conduct periodic inspections to ensure compliance with the erosion and sediment control plan. During operation of the SFERP, discharges to the combined sewer system, including stormwater runoff, will be subject to the permit requirements of the City's Class I permit for industrial waste discharge. The permit requirements will include compliance with the federal combined sewer overflow control policy minimum controls, including development and implementation of a pollution prevention program. The City's pollution prevention program would require best management practices to minimize the amount of pollutants carried by stormwater to the combined sewer system.

Therefore, the project will not result in any substantial change in surface water, erosion, or siltation on- or offsite or in flooding on- or offsite, and the project would not exceed the capacity of existing drainage systems.

8.14.6.2 Effects on Groundwater

Groundwater at the project site is currently not used for potable water, and the project will have no effect on groundwater. The minor excavation and foundation structures required for SFERP would not result in any substantial change from the existing groundwater flow and conditions at the site. During construction, temporary dewatering may be required, and any dewatering activity would require a permit from the City for discharge to the combined sewer system. However, the project will have no long-term effect on groundwater.

8.14.6.3 Effects on Recycled Water and Potable Water

The project will use recycled water produced onsite for cooling tower makeup, other process water, equipment wash water, and dual plumbing. Recycled water use will have a minimal net positive impact on water resources by reducing the amount of water discharged to San Francisco Bay and is consistent with the CEC objective for reusing water to the greatest extent practicable.

In addition, installation of dual plumbing would enable use of recycled water for toilets and other non-potable uses and would reduce the demand on the potable water supply.

8.14.6.4 Effects on Water Quality

The project would not result in a measurable effect on water quality during construction or operation. During construction, development and implementation of the site-specific Construction SWPPP and compliance with the requirements of the Port's SWMP and the RMP/SMP will ensure that stormwater runoff and construction wastewater do not present a risk of impact to water quality. During operation, wastewater and stormwater discharges would flow to the City's combined sewer system in compliance with the Article 4.1 of the San Francisco Public Works Code. Flows to the combined sewer system would then be treated and discharged to the Bay in compliance with all applicable regulatory permits, providing an approved level of water quality protection.

During operation, the wastewater streams would consist of three main sources: industrial process water, stormwater discharges, and sanitary sewage. Quality and quantity of industrial wastewater discharges to the City's combined sewer system must be in compliance with a permit from the City under Article 4.1 of the San Francisco Public Works Code. The discharge would be required to meet the discharge limitations specified in Table 8.14-2 and other numeric and narrative standards discussed in Subsection 8.14.3.3.1. As shown in Table 8.14-8, the anticipated quality of wastewater discharges from SFERP would be well within the City's discharge limitations. Discharge of stormwater from the site would flow to the combined sewer system. The volume of sanitary sewage would be about 1,440 gallons per day, which is minimal compared to the overall volume of discharges to the City's sewer system.

The source of process and cooling water would be recycled water produced onsite and originating from water that would otherwise be transported to the SEWPCP; therefore, there would be a small net decrease in volume of overall discharges to the Bay. The project in effect would divert wastewater that would otherwise be discharged to the Bay, and that wastewater would be treated to meet Title 22 standards for recycled water and any additional processes needed to meet water quality requirements for the SFERP process and cooling water. Under average water usage conditions, about 48 percent of the recycled water would be returned to the combined sewer system and nearly 52 percent of the recycled water would be lost to evaporation. The net result would be a reduction in flow to the combined sewer system and a slight reduction in the volume of outflow discharges to the Bay, even though mass loading of pollutants would be the same. This would be an incidental, albeit minor, beneficial impact to water quality.

During construction, development and implementation of the site-specific Construction SWPPP and compliance with the requirements of the Port's SWMP and the RMP/SMP will ensure that stormwater runoff and construction wastewater do not present a risk of impact to water quality. After completion of the storm drain system, any stormwater drainage during construction would flow to the City's combined sewer system, where it would receive treatment at the SEWPCP or other wet weather facilities and would be discharged through an existing outfall or overflow structure in compliance with the existing NPDES permit. Because the City's combined system provides a much higher level of stormwater treatment than the Port's dedicated storm drainage system, the collection of storm drainage

in the combined system would eliminate untreated discharge of stormwater into San Francisco Bay.

8.14.6.5 Effects on Flooding Potential

The project site is located at an elevation of approximately 13 to 15 feet above mean sea level (North American Vertical Datum) and roughly 500 feet (average) from the shoreline. The highest tide ever recorded in the project area is approximately 9.25 feet above mean sea level, measured using the North American Vertical Datum, 1988 (AGS, Inc., 1999). Therefore, the project will have no potential to affect or be affected by flooding.

Although seiches and tsunamis can occur and cause tidal surges in San Francisco Bay, the Bay greatly attenuates tsunamis that might reach the Golden Gate area and these events are extremely rare. Potential inundation from seiche, tsunami, or mudflow is considered remote.

8.14.7 Mitigation Measures

Implementation of the SFERP project as designed will have less-than-significant impacts. The following project elements will effectively reduce potential impacts to water resources:

- Use of recycled water for cooling-tower makeup, other process water, and equipment washwater would divert wastewater from the combined sewer system.
- Compliance with requirements of Article 4.1 of the San Francisco Public Works Code regarding quality and quantity of discharges to the combined sewer system would avoid potential water quality effect on the Bay.
- Compliance with the Reclaimed Water Ordinance requiring installation of dual plumbing would reduce demand on the potable water supply.
- Compliance with the City's requirements for an erosion and sediment control plan would reduce potential impacts of stormwater runoff from the construction site.

8.14.8 Proposed Monitoring Plans and Compliance Verification Procedures

Routine monitoring and reporting of wastewater discharges and compliance verification will be required as part of the City's permitting requirements under Article 4.1 of the San Francisco Public Works Code. The Applicant will also be required to prepare an erosion and sediment control plan for review and approval by the Port and/or the City and will be subject to periodic inspection by the City during construction to ensure no adverse impacts to water quality. No additional monitoring of surface or groundwater will be required because no water quality impacts are expected to occur.

8.14.9 Cumulative Impacts

Cumulative impacts to water resources could occur through the contribution of additional industrial wastewater or stormwater runoff to the combined sewer system. However, as discussed previously, none of these categories of water use is expected to result in impacts to water resources, and therefore, the project would not contribute to cumulative impacts, as summarized below:

- **Surface Water:** The project would not involve construction in or disturbance of any surface waters or wetlands. All drainage from the site will be directed to the combined sewer system.
- **Recycled Water**: The use of recycled water will have a net positive benefit for water supplies in the region, by reducing the net outflow of treated wastewater to the Bay.
- **Plant Sewage**: The proposed plant staff will generate insignificant volumes of sanitary sewage, not measurable within the total dry weather wastewater flows, and in addition, installation of dual plumbing so that recycled water would be used for toilet flushing would further reduce the net increase in sanitary sewage.
- **Groundwater**: The project would have no impact on groundwater, with the possible exception of encountering shallow groundwater during construction.
- **Stormwater**: The project would not change the volume or rate of stormwater generated from the site. As part of the project, the site would be covered by 100 percent impervious surfaces and discharge stormwater runoff to the City's combined sewer system, rather than to on-site infiltration or runoff directly to the Bay.

8.14.10 Permits Required and Agencies Consulted

A summary of required permits and agency contacts is provided in Table 8.14-9.

TABLE 8.14-9
Water Quality Permits Required for SFERP

Permit	Schedule	Agency
San Francisco Class I Industrial Discharge Permit, Construction dewatering permit	Minimum of 90 days prior to the commencement of the discharge	San Francisco Public Utilities Commission Bureau of Environmental Regulation and Management 3801 Third Street, Suite 600 San Francisco, CA 94124 Contact: Tommy Lee, Division Engineer, Environmental Regulation and Management (415) 695-1321

8.14.11 References

AGS, Inc. 1999. *Final Geotechnical Study Report – MUNI Metro East Light Rail Vehicle Maintenance and Operation Facility*. Prepared for the City and County of San Francisco Public Transportation Department.

AGS, Inc. 2000. *Final Risk Management Plan and Site Management Plan – MUNI Metro East Light Rail Vehicle Maintenance and Operations Facility*. Prepared for San Francisco Municipal Railway, City and County of San Francisco.

California Stormwater Quality Association (CASQA). 2003. *Stormwater Best Management Practice Handbook for Construction*. January.

Lee, Tommy. 2004. Letter to Joyce Hsiao, Orion Environmental Associates from Tommy Lee, San Francisco Public Utilities Commission, Bureau of Environmental Regulation and Management, Division Engineer, dated February 4, 2004 regarding the San Francisco Electric Reliability Project, Industrial Wastewater and Stormwater Discharge Permit Requirements.

Port of San Francisco. 2003. *Port of San Francisco Storm Water Management Plan*. December.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 1995. *Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)*.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 2002. Order No. R2-2002-0073, NPDES Permit No. CA 0037664. *Waste Discharge Requirements for City and County of San Francisco, Southeast Water Pollution Control Plant, North Point Wet Weather Facility and Bayside Wet Weather Facilities.* Adopted June 19, 2002.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 2003. *2002 CWA Section 303(d) List of Water Quality Limited Segment*. Approved by the SWRCB on February 4, 2003.

San Francisco Planning Department. 1995. Community Safety Element.

San Francisco Planning Department. 1996. *San Francisco General Plan*. Environmental Protection Element (1997), Community Safety Element (1995), and Central Waterfront Specific Area Plan (1998).

San Francisco Planning Department. 1997. *San Francisco Recycled Water Master Plan and Groundwater Master Plan, Final Environmental Impact Report*. Planning Department Case No. 92.371E. State Clearinghouse No. 94123049. Certified August 7, 1997.

San Francisco Planning Department. 2001. *San Francisco Southern Waterfront, Supplemental Environmental Impact Report*. Planning Department Case No. 1999.377E. State Clearinghouse No. 94123007. Certified February 15, 2001.

State Water Resources Control Board (SWRCB). 1997. *State Water Resources Control Board (State Water Board), Water Quality Order No. 97-03-Dwq National Pollutant Discharge Elimination System (NPDES) General Permit No. Cas000001 (General Permit), Waste Discharge Requirements (WDRs) For Discharges Of Stormwater Associated With Industrial Activities Excluding Construction Activities*. Available at www.swrcb.ca.gov/stormwtr.

State Water Resources Control Board (SWRCB). 1999a. Water Quality Order 99-08-DWQ. National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges Associated with Construction Activity (General Permit). Available at http://www.swrcb.ca.gov/stormwtr.

State Water Resources Control Board (SWRCB). 1999b. *Consolidated Toxic Hot Spots Cleanup Plan*. April 1999. Accessed at http://www.swrcb.ca.gov/bptcp/docs/conplnv2.doc.

Treadwell & Rollo and Watershed Resources Collaboration Group. 2003. *Revised Draft Storm Water Management Study for Port of San Francisco Southern Waterfront, Pier 70 to Pier 96*. Prepared for: San Francisco Department of Public Works, Bureau of Construction Management, Site Assessment and Remediation. March.

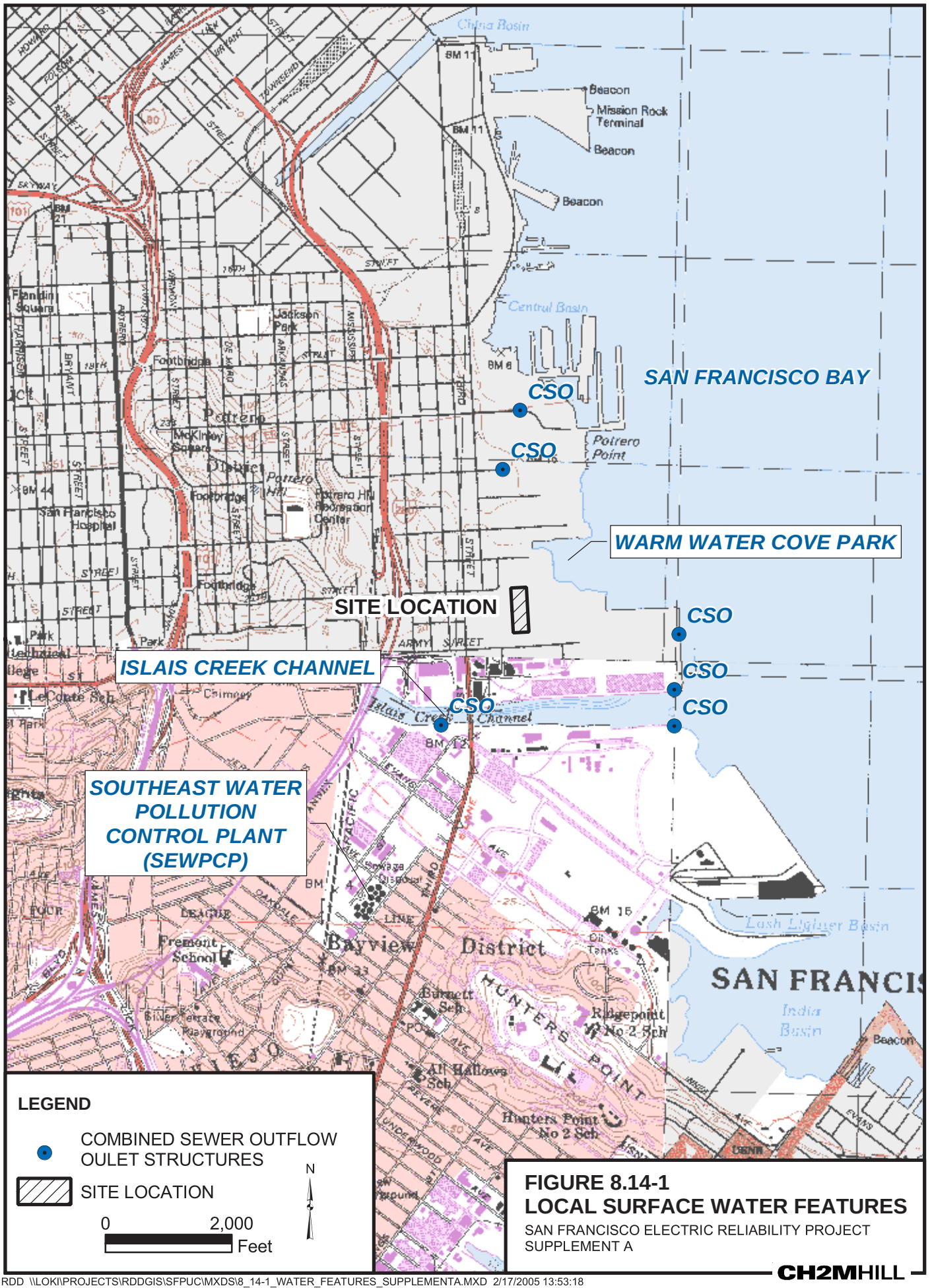

FIGURE 8.14-1
LOCAL SURFACE WATER FEATURES
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A

CH2MHILL

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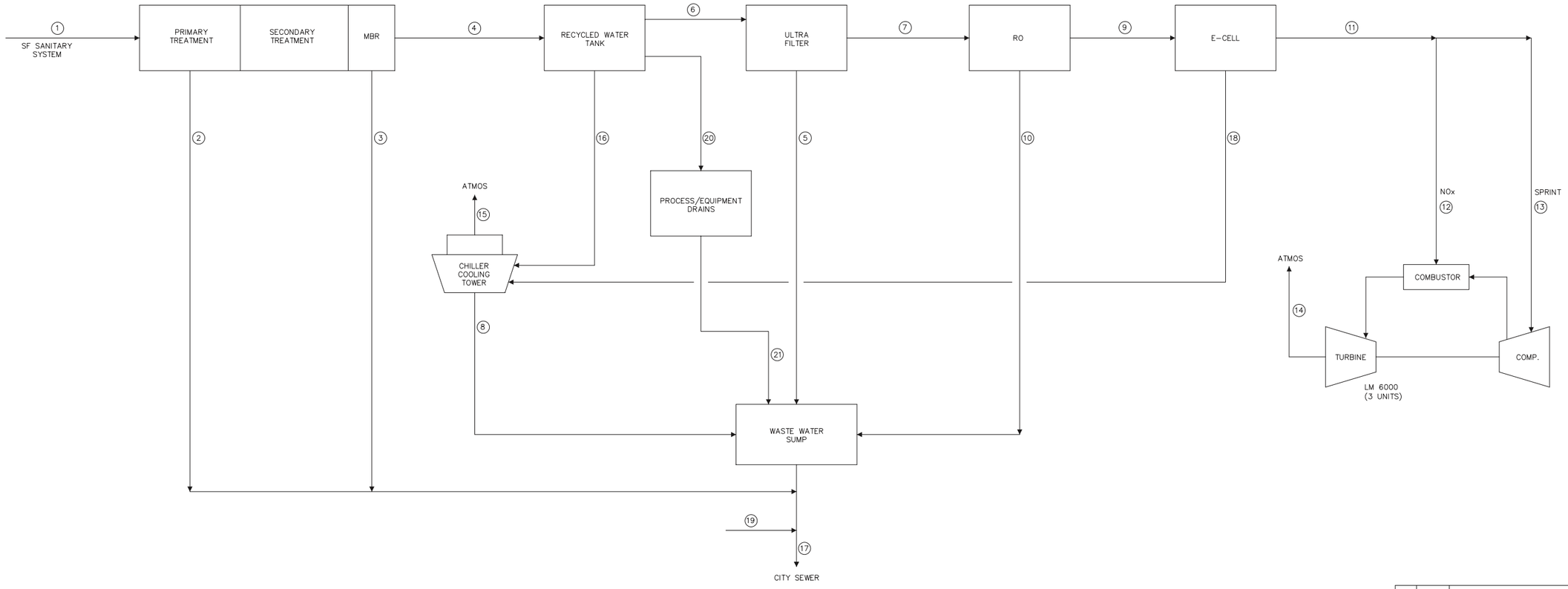

SFPUC Electric Reliability Project - Water Balance — Rev E

Point No	From	To	Average Water Use (3 CTG's in Operation) GPM	Maximum Water Use (3 CTG's in Operation) GPM	Notes
1	SF sanitary system	Primary/Secondary Treatment	349	408	
2	Primary Treatment	Plant wastewater system	100	100	
3	MBR	Plant wastewater system	10	12	
4	MBR	Recycled water tank	239	296	
5	Ultra Fiter Reject	Plant Waste Water Sump	15	14	
6	Reclaimed water tank	Ultra Filter Inlet	222	221	
7	Ultra Fiter Product	RO Inlet	207	206	
8	Cooling Tower Blowdown	Plant Waste Water Sump	5	16	(@ 5 cycles of conc)
9	RO Product	E-Cell Inlet	175	174	
10	RO Reject	Plant Waste Water Sump	33	32	
11	E-Cell Product (DI Water)	CTG NOx & SPRINT Injection	166	165	
12	E-Cell Product (DI Water)	CTG NOx Injection	141	140	@ 25 ppm NOx
13	E-Cell Product (DI Water)	CTG SPRINT Injection	25	25	
14	DI Water Evaporation	Atmosphere	166	165	
15	Cooling Tower Evaporation	Atmosphere	19	64	
16	Recycled Water Tank	Cooling Tower Makeup	15	71	
17	Plant wastewater system	City Sanitary Sewer	166	183	
18	E-Cell Reject	Cooling Tower Makeup	9	9	
19	Domestic	Plant wastewater system	2	4	
20	Recycled water tank	Plant / equipment drains	2	4	
21	Plant / equipment drains	Plant Waste Water Sump	2	4	

Annual reclaimed water usage: 43,013,015 gallons
(based on 12,000 turbine-hours) 132 acre-feet

SYMBOL	DATE	REVISION DESCRIPTION	DRAWN	APP'D
E	2-19-04	WATER BALANCE CHART ADJUSTED		
D	2-16-04	REVISED FOR 3 CTG'S		
C	1-27-04	REVISED PRELIMINARY ISSUE		
B	1-5-04	PRELIMINARY ISSUE FOR REVIEW		
A	11-18-03	PRELIMINARY ISSUE FOR REVIEW		

PB Power, Inc.
A Parsons Brinckerhoff Company
303 SECOND STREET, SUITE 700 NORTH, SAN FRANCISCO, CALIFORNIA 94107

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
SAN FRANCISCO, CALIFORNIA

ELECTRIC RELIABILITY PROJECT
WATER BALANCE DIAGRAM

DR. LTW
DES. CM
CHK. CM
APPROVED DATE
PRINCIPAL IN CHARGE DATE
DRAWING NO. M2.2
REV E
SHEET OF

FIGURE 8.14-2
WATER BALANCE DIAGRAM
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT
SUPPLEMENT A