K. UTILITIES AND SERVICE SYSTEMS

This section evaluates the Proposed Project’s effects on utilities and service systems, which include wastewater collection and treatment, wastewater recycling and reuse, stormwater collection and treatment, water supply (for potable and fire-fighting water), solid waste disposal, electricity and gas infrastructure, and telecommunications. This section identifies both Project-level and cumulative environmental impacts, as well as feasible mitigation measures. Impacts related to electricity and natural gas demand are discussed in Section IV.Q, Mineral and Energy Resources.

K.1 WASTEWATER COLLECTION AND TREATMENT

SETTING

Existing Wastewater Collection System

The San Francisco Public Utilities Commission (“SFPUC”) maintains and operates the existing Navy-owned wastewater collection and treatment system on Treasure Island and Yerba Buena Island. Unlike most of San Francisco, Treasure Island has separate wastewater and stormwater collection systems. Stormwater collection and treatment is discussed in Section K.3, below.

The existing wastewater collection system consists of 4- to 12-inch-diameter gravity sewer pipes, approximately 27 sewage pump/lift stations, and force mains ranging from 6 to 16 inches in diameter. Pipes are made of polyvinyl chloride (“PVC”), asbestos cement, cast iron, steel, and vitrified clay. The pump/lift stations are a mix of dry-well and wet-well systems.

Treasure Island has 11 main drainage areas. In general, each has a combination lift and pump station. The lift station pushes flow up to a pump station. The pump stations feed the main trunk line that carries sewage to the wastewater treatment plant in the northeast corner of Treasure Island. The main trunk line begins at the southwest corner of Treasure Island, follows California Avenue to the east, and then goes along Avenue M to the north to connect to the treatment plant.

On Yerba Buena Island, there are two wastewater collection systems. The eastern side of the island, including the Coast Guard Station and Sector Facility, has a gravity sewer system that drains to a pump station under the Bay Bridge at the eastern tip of Yerba Buena Island. The pump station sends the flow through a 6-inch-diameter, submarine force main to the southern shore of Treasure Island. The western side of Yerba Buena Island has a gravity sewer system that flows to, and across, the causeway. It connects to the Treasure Island sewer system near the road’s entrance to Treasure Island.

1 Lift stations lift the wastewater up to a level where it can flow by gravity. Pump stations put the wastewater in the pipes under pressure; such pipes are called force mains.
Existing Wastewater Treatment

The existing Treasure Island Wastewater Treatment Plant, at the northeast corner of Treasure Island, serves both Treasure Island and Yerba Buena Island. Primary treatment facilities were built in 1961. Primary (physical) treatment typically consists of several steps to remove solid material from the wastewater flows. A common first step is to remove large objects and debris, such as rags, paper, and plastics, with bar screens. Another frequently used step is to remove grit (sand and other inorganic particles). A key step is primary clarification, in which solids are settled out and floating matter is skimmed off.

Secondary treatment facilities were added at Treasure Island in 1969. During secondary (biological) treatment, microorganisms metabolize biological matter. Following secondary treatment, the flow is chlorinated to kill pathogens, then dechlorinated. After dechlorination, the effluent is discharged to the Bay via an outfall. The plant was upgraded in 1989 to expand treatment capacity to 2.0 million gallons per day (“mgd”).

The solids resulting from primary and secondary treatment are processed by anaerobic digestion, in which microorganisms break down organic matter. The resulting solids are dewatered by centrifuge and then trucked to the land application site in Solano County used by the City and County of San Francisco to dispose of much of its wastewater treatment solids.

By about May 2011, the SFPUC plans to replace the anaerobic digestion process for solids with a stabilization process using lime (i.e., calcium carbonate). The lime will be added as a slurry (i.e., lime and water mixture). Typically, lime is added to untreated biosolids to raise the pH to 12 or higher, with the dosage dependent on type and concentration. The lime stops or reduces the microbial reactions that can lead to odor production. Lime can also inactivate pathogens, and may be less expensive than traditional anaerobic digestion. The lime slurry will discharge into and out of a double-walled, high-density, polyethylene, chemical tank with a capacity of approximately 5,000 gallons. Transport off site would be by truck, similar to existing solids transport off the Islands.

The quality and quantity of discharged effluent from the treatment plant is governed by a National Pollutant Discharge Elimination System (“NPDES”) permit, as described in

---

2 Sodium hypochlorite and sodium bisulfite are used for disinfection. In fiscal year 2009-2010, the total annual usage was 21,000 dry pounds of sodium hypochlorite and 50,000 dry pounds of sodium bisulfite.
3 “Anaerobic” digestion takes place in the absence of oxygen.
4 Polymer is used in the dewatering process. In fiscal year 2006-2007, the total annual usage was 150 dry pounds.
5 Email between Michael Marten, SFPUC, and Michael Tymoff, Mayor’s Office of Economic and Workforce Development, forwarded to Turnstone Consulting on November 30, 2010.
Section IV.O, Hydrology and Water Quality, p. IV.O.9. The regulatory agency, the San Francisco Bay Regional Water Quality Control Board (“RWQCB”), issued the NPDES permit to the Navy. The discharge limits in the current permit are described in Section IV.O, pp. IV.O.9-IV.O.11, and in Table IV.O.2 on p.IV.O.10.

**Regulatory Framework**

Federal and State laws and local policies govern water quality protection, as explained in Section IV.O, Hydrology and Water Quality, “Regulatory Framework,” p. IV.O.11. Water quality requirements determine the type of wastewater collection and treatment facilities needed to manage pollution. Highlights of the applicable requirements are summarized below.

---

IV. Environmental Setting and Impacts
K. Utilities and Service Systems

Federal

The federal Clean Water Act amendments of 1972 prohibit the discharge of pollutants to navigable waters of the United States from a point source, unless the discharger has an NPDES permit. The U.S. Environmental Protection Agency (“EPA”) has delegated certain authority to the State of California.

State

The Porter-Cologne Water Quality Control Act authorizes the State Water Resources Control Board (“SWRCB”), which, in turn, delegated certain authority to the several Regional Water Quality Control Boards (“Regional Boards”) to issue and enforce NPDES permits. In addition, the SWRCB develops water quality standards and performs other functions to protect California’s waters. The Regional Boards carry out the SWRCB regulations and standards, and the Regional Boards issue and enforce permits.

The RWQCB has authority to issue and enforce the NPDES permit related to discharge of wastewater effluent from Treasure Island/Yerba Buena Island. The RWQCB also implements the Water Quality Control Plan for the San Francisco Bay Basin (“Basin Plan”), as described on pp. IV.O.14 – IV.O.15.

The SWRCB has a Sanitary Sewer Overflow Reduction Program. “A sanitary sewer overflow (“SSO”) is any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system.” Untreated overflows frequently contain high levels of suspended solids, pathogenic organisms, nutrients, toxic chemicals, oil, grease, and other pollutants. The SWRCB adopted Water Quality Order No. 2006-0003 (“Sanitary Sewer Order”), which requires public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans to reduce SSOs. In addition, they must report all SSOs to the SWRCB’s online SSO database.

Local

San Francisco Public Utilities Commission Water Pollution Prevention Program

As discussed further in Section IV.O, Hydrology and Water Quality, “Regulatory Framework,” the City has a Water Pollution Prevention Program (“Program”) to avoid and minimize pollutants entering the City’s sewer system and storm drains, thereby reducing pollutant loading to San Francisco Bay and the Pacific Ocean. The Program includes education components for

---

businesses, residents, and city employees. The Program also includes several initiatives that are meant to reduce water pollution, including initiatives meant to reduce toxic chemicals used for landscaping, reduce dental mercury, reduce fats/oils/greases, minimize construction-related water pollution, minimize stormwater pollution, minimize pet waste-related water pollution, properly dispose of medications, and support green design and operation measures for businesses and households. Articles 4, 4.1, and 4.2 of the San Francisco Public Works Code contain many components of the Program.9

One component focuses on industrial wastewater. Industrial customers must pre-treat their wastewater effluent prior to discharge into the City’s sewer system in order to reduce the pollutant demands placed upon the City’s system, and to remove toxic or other types of pollutants that may not be captured by the City’s wastewater treatment plants or that would interfere with the City’s treatment processes.10 The City has also been working for many years to reduce fats, oil, and grease in the wastewater stream from commercial and residential kitchens, especially from restaurants.11 These materials clog pipes and treatment processes. The City has recently proposed a new fats, oil, and grease ordinance, which would strengthen Article 4.1.12 Another component of the Program is the Stormwater Management Program, which is discussed further in Section IV.O, Hydrology and Water Quality, “Regulatory Framework.”13

**San Francisco General Plan**

The Environmental Protection Element and Community Facilities Element of the San Francisco General Plan contain the following policies relating to wastewater facilities:

Environmental Protection Element

**Objective 3:** Maintain and improve the quality of the Bay, ocean and shoreline areas.

**Policy 3.1:** Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay, Ocean, and Shorelines.

**Policy 3.3:** Implement plans to improve sewage treatment and halt pollution of the Bay and Ocean.

---


10 Article 4.1 of the SF Public Works Code governs industrial dischargers. See http://library.municode.com/HTML/14142/level1/A4.1.html, accessed June 13, 2010. Industries must register (section 126), apply for permits (section 125), pre-treat (section 123), and monitor and report on their discharges (section 127).


Community Facilities Element

Objective 10: Locate wastewater facilities in a manner that will enhance the effective and efficient treatment of storm and wastewater.

Policy 10.1: Provide facilities for treatment of storm and wastewater prior to discharge into the Bay or ocean. Locate such facilities according to the Wastewater and Solid Waste Facilities Plan.\(^{14}\)

**IMPACTS**

**Significance Criteria**

The City and County of San Francisco has not formally adopted significance thresholds for impacts related to wastewater collection and treatment. The Planning Department’s Initial Study Checklist provides a framework of topics to be considered in evaluating potential impacts under the California Environmental Quality Act (“CEQA”). Implementation of a project could have significant impacts related to wastewater treatment facilities if it were to:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments.

**Issues with No Impacts**

Based on the features included in the Proposed Project, there would be no impacts related to the following issues using the significance criteria listed above, and as such, no detailed analyses are necessary.

**Wastewater Treatment Requirements**

The Proposed Project would include an upgraded or new wastewater treatment plant, replacing the existing plant on Treasure Island. The proposed wastewater treatment plant would be required to meet the provisions of the new NPDES permit issued by the RWQCB in 2010 (see “Existing Wastewater Treatment,” p. IV.K.2) or an updated permit if required. (Under the Proposed Project, the SFPUC would continue to operate and maintain the wastewater treatment plant. TIDA would be the permit holder until such time as the

\(^{14}\) The Wastewater and Solid Waste Facilities Plan noted here in Policy 10.1 is a map that covers only mainland San Francisco. It does not include Treasure Island and Yerba Buena Island; therefore, the map provides no direction related to the Project Area.
wastewater treatment plant and wastewater collection system are accepted into SFPUC’s system.

Table IV.O.2: NPDES Permit Effluent Limitations for 2010 through 2015, in Section IV.O, Hydrology and Water Quality, p. IV.O.9, summarizes key effluent limitations in the NPDES permit. The basic purposes of primary and secondary treatment include removing inorganic and organic solids, thereby meeting the NPDES permit’s effluent limitations for Total Dissolved Solids and Biochemical Oxygen Demand (“BOD₅”). Under primary treatment, the headworks remove floating solids, grit, and floating oil and grease. A primary sedimentation tank removes settleable solids. This technology has been used successfully for decades. However, to remove suspended solids, including organic solids that would otherwise decompose, and dissolved oxygen from the receiving water, secondary treatment would be used. (It is important to limit the uptake of dissolved oxygen from the receiving water, because fish and other living things in the receiving water depend upon dissolved oxygen.) The proposed secondary treatment includes Trickling Filter/Solids Contact (“TF/SC”). TF/SC has been successfully used since 1979 in the United States, and advancements over the years have improved its effectiveness.¹⁵ TF/SC can typically achieve less than 20 mg/L BOD₅.¹⁶ The NPDES limit is 30 mg/L BOD₅ monthly average and 45 mg/L BOD₅ weekly average; therefore, the TF/SC technology would meet these limits. The closest TF/SC plants to the Proposed Project are located in Hayward and Vallejo, and both are considerably larger than the existing and proposed plants at Treasure Island. Regarding other NPDES permit limits, coliform bacteria would be killed through ultraviolet light, a disinfection method that has become commonly used instead of chlorine, or by chlorination, which is the current disinfection method. Effluent pH (how acidic or how caustic the effluent is) would be addressed through common methods of adding chemicals. In sum, the treatment processes have been well tested in many other locations and are expected to meet the NPDES permit limitations.

Similarly, the proposed wastewater treatment plant and management of the wastewater system would be designed to meet other limitations in the NPDES permit. For example, source control (working to prevent pollutants from entering the wastewater stream) and pretreatment may be effective at reducing copper and cyanide from the wastewater treatment plant effluent. Therefore, the NPDES permit requires a Copper Action Plan and a Cyanide Action Plan, and the SFPUC would implement measures to reduce these pollutants.


Therefore, the Proposed Project would comply with the wastewater treatment requirements of the RWQCB, and there would be no impact related to this significance criterion.

**Wastewater Collection System Facilities**

Although the existing wastewater collection system would be inadequate to serve the complete buildout of the Development Program, an entirely new collection system would be part of the Proposed Project, which would meet the requirements of the Proposed Project at full build-out. The proposed wastewater collection system would provide environmental benefits. New and better pipes would reduce infiltration and inflow of groundwater and stormwater into the system and reduce the risk of leaks and breaks. The conceptual design for the new collection system, shown in Figure II.15: Proposed Wastewater Collection System, in Chapter II, Project Description, p. II.57, would have sufficient capacity to accommodate anticipated flows from the Proposed Project. Therefore, there would be no impact regarding adequate capacity of wastewater collection facilities.

**Wastewater Treatment Facilities**

The Proposed Project would generate about 1.3 mgd of wastewater. By land use, residential uses would generate about 0.9 mgd; retail, commercial, and hotel uses, about 0.2 mgd; and all other uses, about 0.2 mgd. Although the existing wastewater treatment plant does not have the capacity to serve the complete buildout of the Development Program, a new or upgraded wastewater treatment plant is included as part of the Proposed Project. The new or upgraded wastewater treatment plant would have the capacity to treat both the estimated dry weather wastewater flow of 1.3 mgd and the estimated peak wet weather wastewater flow of about 2.9 mgd. Therefore, there would be no impact regarding adequate capacity of wastewater treatment facilities.

**Approach to Analysis and Project Features**

Typically, EIRs compare the additional flows from the project to the capacity of the existing wastewater infrastructure. In this case, the Proposed Project includes an entirely new or upgraded wastewater system. Pipelines, pump stations, and treatment processes would be specifically designed to provide sufficient capacity to handle anticipated flows.

For the Proposed Project, wastewater generation estimates are based on estimated water demand. Average wastewater flows are based on about 90 to 100 percent of potable water usage.

---

Proposed Project Facilities

The Proposed Project would treat wastewater on site.\textsuperscript{19} As discussed in “G. Proposed Utilities” in Chapter II, Project Description, p. II.56, a Master Wastewater System Plan will be prepared in coordination with the SFPUC. Design criteria for the new or upgraded wastewater treatment facility will be coordinated with the SFPUC. The components of the wastewater system are described below. Further details regarding these components will be set forth in the Master Wastewater System Plan developed in coordination with the SFPUC.

Proposed Wastewater Collection System

The Proposed Project includes a complete replacement (in phases) of the existing wastewater collection system, in part due to its age and condition.\textsuperscript{20} The conceptual system with estimated pipe sizes is shown on Figure II.15, p. II.57. The existing wastewater collection gravity lines, force mains,\textsuperscript{21} and lift/pump stations would be completely replaced (in phases) with a new collection system. The proposed system would be connected to the existing U.S. Coast Guard and Job Corps systems at their respective property lines.

The proposed collection system would include a series of 8- and 18-inch gravity sewer pipelines and 4-, 8-, 10-, and 15-inch force mains located under the new or rebuilt (in the case of Yerba Buena Island) streets. The existing pipes would be replaced with new pipes meeting City-standard pipe materials for the gravity mains (i.e., vitrified clay pipe) and ductile iron pipe with cathodic protection\textsuperscript{22} for the force mains, or alternative pipe materials such as High Density Polyethylene (“HDPE”) or PVC if approved by the SFPUC and SFDPW.\textsuperscript{23}

For Treasure Island, gravity mains would serve the buildings and deliver wastewater to pump stations spaced around the island. The pump stations would use two major force mains to deliver

\textsuperscript{18} Infrastructure Update, Chapter 8, Section 8.4, July 2010.
\textsuperscript{20} The Navy installed the wastewater collection system as needed. The system is generally in poor condition, does not comply with the current City and County of San Francisco standards, and needs to be replaced.
\textsuperscript{21} In a force main materials are pumped through the pipeline rather than travelling by gravity.
\textsuperscript{22} Cathodic protection helps to keep metal pipes from corroding when soil or groundwater in which they are buried contains high levels of salts.
\textsuperscript{23} Infrastructure Update, Chapter 8, Section 8.3 (July 2010).
wastewater to the treatment plant. One force main would begin in the southwestern portion of the island and flow in a counter-clockwise direction along the western, southern, and eastern edges of the island to the treatment plant. The other force main would begin in the northwest and flow clockwise to the treatment plant.

Utility service to the Job Corps campus and buildings would be maintained throughout the phased buildout of the Proposed Project. Wastewater service to the Job Corps campus would be more robust under the Proposed Project. Certain modifications for connections of the wastewater pipes would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process for each major phase.

The eastern side of Yerba Buena Island would be served by gravity flow to the east, to an existing pump station under the east span of the Bay Bridge. The existing pump station would be repaired or replaced as necessary. This pump station would pump wastewater over to the Treasure Island wastewater collection system through one of two routes: 1) the pump station would deliver wastewater back up to the top of Yerba Buena Island, from which point it would flow by gravity to the Treasure Island system; or 2) the pump station would deliver wastewater to the existing submarine force main that currently serves the eastern side of Yerba Buena Island and connects to the Treasure Island system.\(^{24}\) Utility service to the Coast Guard Station and Sector Facility would be maintained throughout buildout of the Proposed Project. Certain modifications to the piping connecting to the proposed replacement pump station could be necessary. Details would be worked out during the design process.

The western side of Yerba Buena Island would be served by gravity pipelines that carry flow down from the residences. They would connect to the gravity main from the eastern side, and wastewater would flow down to the pump station at the south end of the causeway, and then to Treasure Island.

On Treasure Island, existing pump stations and lift stations would also be replaced. The conceptual system also includes approximately 10 to 12 pump/lift stations, a reduction from the 27 existing stations. The number of pump/lift stations would depend upon final grading plans, feasible depth of utility trenching, and the geotechnical improvements. Each station would include redundant pumps, emergency warning systems to alert staff of needed repairs, and an emergency generator in case of power outages.

The existing wastewater collection system would be retained to the extent feasible while the new or upgraded system is under construction. Repairs and upgrades to the existing system would be performed as necessary by the SFPUC to keep the system operational until it is replaced.

\(^{24}\) *Infrastructure Update*, Chapter 8, Section 8.3 (December 1, 2008).
Proposed Wastewater Treatment System\(^{25}\)

The proposed wastewater treatment system consists of: 1) primary treatment using headworks and primary sedimentation, 2) secondary treatment using trickling filter and solids contact, 3) tertiary treatment with microfiltration and reverse osmosis for a portion of the flow to be used as recycled water (discussed in Section K.2, below), and 4) disinfection either by ultraviolet light or chlorination. Figure IV.K.1: Proposed Wastewater Treatment System, shows the “baseline system.”

The primary treatment process would start with the headworks, consisting of a flow measuring device and self-cleaning fine screens. Next, a primary sedimentation tank would remove settleable solids. Odor control for the plant headworks and primary treatment areas would use up to about 50 gallons per day of sodium hypochlorite solution and up to about 12 gallons per day of caustic (sodium hydroxide) solution to neutralize the hypochlorite.

The secondary treatment process would begin with trickling filters. This process consists of a fixed-film media, where primary effluent is fed to the top of the filter tank. As the flow descends, the biofilm on the filter oxidizes organic material. After the filter, the wastewater would go to a solids contact tank to remove suspended solids. In these tanks, the solids that slough off the trickling filter media are removed (by flocculation). The solids contact tank would typically have one day of solids retention time. The solids would go to a secondary clarifier to settle out and then be returned to the solids contact tank.

The waste solids from the primary and secondary treatment processes would be subjected to anaerobic digestion, in which microorganisms break down organic matter. The resulting solids would be dewatered and then land-applied in Solano County, or disposed of through similar, appropriate reuse means. Odor control for the solids handling facility would use up to about 25 gallons per day of sulfuric acid and up to about 5 gallons per day of caustic solution.

Odor control could be carried out using bioscrubbers instead of chemicals. A bioscrubber is an engineered bed of compost and/or wood chips over perforated pipes. Bacteria grow in the bed of compost and break down odorous chemicals in the air. The bioscrubber beds would take up more space in the treatment plant than would the chemical odor control equipment.

The primary and secondary processes described above would be applied to the entire sanitary sewage flow. Then approximately 0.42 mgd of the treated effluent would be treated further and used as recycled water (see Section K.2, Wastewater Recycling Plant, Storage, and Distribution, p. IV.K.14, for more information about recycled water and additional treatment).

\(^{25}\) As part of the project, TICD would provide a developable pad for a new wastewater treatment plant, to be constructed near the existing plant. The new wastewater treatment plant and recycled water plant would be financed, built, owned, and operated by the SFPUC.
Wastewater
1.28 mgd
average dry weather flows

primary and secondary treatment
headworks / primary sedimentation
trickling filter / solids contact treatment

0.42 mgd
average recycled water demand
microfiltration / reverse osmosis *

0.90 mgd
discharge to bay
0.90 mgd
average recycled water demand

disinfection
(UV or chlorination)

* reverse osmosis applied to irrigation demand

0.42 mgd
recycled water average demand for flushing / irrigation / stormwater wetland system

SOURCE: Brown & Caldwell

FIGURE IV.K.1: PROPOSED WASTEWATER TREATMENT SYSTEM

IV.K.11
The remaining effluent would be disinfected with ultraviolet light or by chlorination and discharged through the existing outfall to the Bay. If chlorination were selected, the treatment plant would use sodium hypochlorite to disinfect, and then sodium bisulfite to dechlorinate the effluent.26

Potential impacts of the wastewater treatment operation are discussed in other sections of the EIR, as appropriate. For example, energy use of wastewater treatment is taken into account in Section IV.Q, Mineral and Energy Resources; see “Proposed Project’s Electricity and Natural Gas Demand,” on p. IV.Q.13. Noise from treatment plant operations is discussed under Impact NO-6, in Section IV.N, Noise, p. IV.N.28.

Two variants of the wastewater treatment system would use wetlands as a step in the treatment process. These wastewater wetlands variants are discussed in more detail in Chapter VI, Project Variants, in “D, Wastewater Wetlands Variants.”

The new or upgraded treatment plant would have the capacity to treat both the estimated project buildout flow of 1.3 mgd (the estimated dry-weather flow), and estimated project peak wet-weather flow of 2.9 mgd.

The existing treatment plant would remain in operation as long as feasible during the first phases of new construction. Portions of the new or upgraded treatment plant would be constructed as needed and as feasible during each phase to meet the flow requirements of the project.

As discussed in “Proposed Wastewater Treatment,” in Chapter II, Project Description, p. II.58, the new or upgraded wastewater treatment facility could include testing and possible use of a variety of new technologies for processing effluent or biosolids as they are developed. The SFPUC would assess the effectiveness of these additions at a demonstration project level.

In addition to constructing and operating the new or upgraded wastewater treatment plant, the SFPUC would have use of an additional 4 to 6 acres near the treatment plant on Treasure Island. The SFPUC would use this property for a range of uses that may include infrastructure improvements furthering the objectives in the proposed Sustainability Plan.

26 To treat the estimated 1.3 mgd of dry weather flow, about 70,000 dry pounds of sodium hypochlorite and 166,000 dry pounds of sodium bisulfite would be used annually.
Project Impacts

Construction

Impact UT-1: Construction activities associated with wastewater infrastructure for the Proposed Project could result in air quality, noise, water quality, transportation, hazardous materials, and biological impacts, as further evaluated under construction subsections in those EIR topics. (See significance determinations in other topics.)

The second significance criterion listed above indicates that the Proposed Project would have a significant adverse effect if it would require, or result in, the construction of new or upgraded
wastewater collection or treatment facilities, where the construction would cause significant environmental effects. Demolition, land clearing, grading, and other ground-disturbing construction activities would temporarily affect local air quality during each phase of construction of the wastewater facilities, causing temporary and intermittent increases in particulate dust and other pollutants. Operation of construction trucks and heavy equipment would create fugitive dust and emit nitrogen oxides, carbon monoxide, reactive organic gases or hydrocarbons, and particulate matter, as a result of diesel fuel combustion. Use of hazardous materials in new construction could result in emissions of toxic air contaminants. Construction activities and heavy equipment would also cause temporary and intermittent increases in noise during each construction phase. Excavation may result in release of volatile contaminants in the ground or groundwater, and excavated soils could contain hazardous materials. Construction activities could pollute run-off from construction areas. Construction trucks and other vehicles could cause transportation impacts on local roads and/or the Bay Bridge. Construction activities could adversely affect biological resources.

These potential impacts of construction, including construction of wastewater infrastructure, are discussed in Section IV.E, Transportation, pp. IV.E.67 – IV.E.71 (Impact TR-1); Section IV.F, Noise, pp. IV.F.14 – IV.F.20 (Impacts NO-1 and NO-2); Section IV.G, Air Quality, pp. IV.G.24-IV.G.38 (Impacts AQ-1 – AQ-4); Section IV.M, Biological Resources, pp. IV.M.41-IV.M.63 (Impacts BI-1 – BI-6); Section IV.O, Hydrology and Water Quality, pp. IV.O.35 – IV.O.41 (Impacts HY-1 – HY-7); and Section IV.P, Hazards and Hazardous Materials, pp. IV.P.39 – IV.P.51 (Impacts HZ-1 – HZ-9).

Operation

**Impact UT-2: Wastewater collection system blockages or lift/pump station failures could result in sanitary sewer overflows. (Less than Significant)**

Sanitary sewer overflows may occur when a lift/pump station fails, if sewer lines become plugged, or if the volume of flows is high enough to overwhelm the system. The current collection system has this risk. Under the Proposed Project, to prevent potential Sanitary Sewer Overflows, the proposed lift/pump stations would include redundant pumps, alarm systems, and emergency back-up power generators. Assuming normal maintenance and monitoring, the pump stations would operate with a very low probability of failure. In addition, replacing the collection system would reduce inflow and infiltration, which in turn would reduce flows during wet weather. Also, the system would be operated in compliance with SWRCB Water Quality Order No. 2006-0003 (Sanitary Sewer Order) which requires public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans to reduce and eliminate sanitary sewer overflows.
Because of these risk reduction features, the Proposed Project would be expected to have a less-than-significant effect regarding Sanitary Sewer Overflows, and no mitigation is required.

Cumulative Impacts

Impact UT-3: Construction and operation of the Proposed Project would not significantly contribute to cumulative infrastructure deficits or result in the exceedance of wastewater discharge requirements. *(No Impact)*

Treasure Island and Yerba Buena Island have, and would have, “stand-alone” infrastructure. No cumulative infrastructure deficits would be created. In addition, RWQCB requirements would not be exceeded. Therefore, there would be no cumulative impacts regarding wastewater collection and treatment facilities.

**K.2 WASTEWATER RECYCLING PLANT, STORAGE, AND DISTRIBUTION**

**SETTING**

Existing Conditions

Wastewater recycling (also called “water recycling”) generally means treating wastewater to the degree that it can be reused for purposes such as landscape irrigation, crop irrigation, toilet flushing, and even drinking. Currently, there is no wastewater recycling at Treasure Island or Yerba Buena Island. There is no regulatory requirement that mandates recycling at the existing wastewater treatment plant.

Regulatory Framework

Federal and State laws and local policies govern water quality protection, as explained in Section IV.O, Hydrology and Water Quality, “Regulatory Framework,” p. IV.O.11. Requirements applicable to recycling water are summarized below.

Federal

The Federal Clean Water Act is the primary Federal legislation protecting water quality. The USEPA has delegated certain authority under the Clean Water Act to the SWRCB, as discussed below.

---

27 “Reclaimed water” means wastewater effluent treated to meet California Department of Public Health standards.
State

California law and the SWRCB encourage the use of recycled water to the maximum extent in order to supplement existing surface and ground water supplies to help meet water needs. In 2009, the SWRCB adopted a Recycled Water Policy that focuses on increasing the use of recycled water from municipal wastewater sources. The Recycled Water Policy sets Statewide volumetric targets for recycling and describes the relationships between State agencies with jurisdiction over water, with respect to recycling. The SWRCB also approved a general permit for the use of municipal recycled water for landscape irrigation. Under the general permit, landscape irrigation uses include parks, greenbelts, and playgrounds; school yards; athletic fields; golf courses; cemeteries; residential landscaping, common areas; commercial landscaping, except eating areas; industrial landscaping, except eating areas; and freeway, highway, and street landscaping.

An entity that proposes to recycle water, or to use recycled water, must file a report with the Regional Water Quality Control Board (“RWQCB”). If the RWQCB determines that it is necessary to protect public health, safety, or welfare, it may prescribe water recycling requirements and issue a permit. The RWQCB must consult with the California Department of Public Health (“CDPH”) when it issues water recycling requirements. The CDPH has established statewide recycling criteria for the various uses of recycled water to ensure protection of public health. The level of treatment required by the CDPH depends on the potential exposure of human beings to the recycled water. For irrigation of food crops where the recycled water comes into contact with the edible portion of the crop (including root crops), CDPH requires disinfection and tertiary treatment. In addition, the recycled water must have any other impurities removed that would detract from the intended use. At Treasure Island, intrusion of

28 California Water Code Sections 13510-13512.
31 California Water Code Section 13522.5.
32 California Water Code Section 13523.
33 The California Department of Health Services (“DHS”) was reorganized, and the pertinent regulatory authority now lies within the California Department of Public Health.
34 California Water Code Section 13523.
35 California Code of Regulations, Title 22, Division 4, Chapter 3, Sections 60301, et seq. (referred to as “Title 22” in subsequent footnotes in this Recycled Water subsection of the EIR.)
36 Title 22, Section 60304(a).
saltwater into the sewers increases the salinity of collected sewage. The excess chlorides in salt means the treated wastewater could be detrimental to plants unless chloride is removed.\textsuperscript{37}

In 2007, the State passed AB 1406, amending Section 13553 of the California Water Code, and authorizing the use of recycled water for toilet and urinal flushing in condominium projects created after January 1, 2008, subject to specified conditions as follows: (a) potable water service to the condominium project has a backflow protection device approved by the State to protect the public, potable water supply; (b) plumbing modifications are done in accordance with plumbing codes; (c) a condominium project’s potable and nonpotable systems must be tested at least every four years for cross-connections; (d) recycled water lines must be color coded; (e) notices of the use of recycled water must be provided to buyers and owners; and other conditions.\textsuperscript{38}

**Local**

In 1991, the SFPUC sponsored and the San Francisco Board of Supervisors passed a Reclaimed Water Use Ordinance requiring the Water Department (now part of the SFPUC) and the Department of Public Works to prepare a coordinated, comprehensive citywide plan for the efficient expansion of the use of reclaimed water and groundwater sources.\textsuperscript{39} It also generally requires development projects over 40,000 sq. ft. to build and operate a reclaimed water system within the buildings and a reclaimed water irrigation system for the landscaping.\textsuperscript{40} The City also restricts use of potable water for soil compaction and dust control activities for construction and demolition purposes.\textsuperscript{41}

The SFPUC has a recycled water program and aims to develop irrigation projects, such as the Westside Recycled Water Project (which would serve Golden Gate Park and other areas) and Harding Park Golf Course.\textsuperscript{42} Use of recycled water is an integral part of the SFPUC’s Water System Improvement Program; this program is discussed in more detail below under “K.4 Water Supply and Distribution System (Potable and Fire-Fighting),” p. IV.K.38.


\textsuperscript{38} California Water Code Section 13553(d).


\textsuperscript{40} *Ibid*, section 1204.


IMPEACTS

Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to utilities, including wastewater recycling. The Planning Department’s Initial Study Checklist form provides a framework of topics to be considered in evaluating potential impacts under CEQA. Implementation of a project could have significant impacts related to wastewater recycling facilities if it were to:

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Approach to Analysis

No recycled water is currently produced or used in the Project Area. Therefore, the analysis of recycled water does not compare existing to proposed recycled water production or use. Rather, the analysis discusses the effect that use of recycled water would have on the Proposed Project’s overall water demand.

Proposed Project Facilities

The use of recycled water for irrigation and other purposes is a major component of the Treasure Island Sustainability Plan. Recycled water would be used to irrigate open space areas, the Urban Agricultural Park, roadside plantings, and landscape water features, and for appropriate plumbing fixtures in commercial buildings and residential buildings on Treasure Island to the extent permitted at the time of construction. Recycled water may also be used to maintain water levels in the stormwater treatment wetlands during the dry season. (See “K.5, Stormwater Collection and Treatment,” regarding the proposed stormwater treatment wetlands.) The estimated average daily demand for recycled water for the above listed uses on Treasure Island is about 420,000 gallons per day.

As discussed in Chapter II, Project Description, p. II.60, a detailed Master Recycled Water Plan will be prepared in accordance with SFPUC rules and requirements. Under the Development Program, a developable pad would be provided for the new recycled water plant. The recycled water plant would be constructed and operated by the SFPUC. The Master Recycled Water Plan will include the recycled water facility design requirements, detailed layouts and hydraulic

---

43 2006 Treasure Island Sustainability Plan, p. 59. In addition, Strategy W5 is, “Maximize use of recycled water.”
44 Infrastructure Update, Chapter 7, Table 7.2, addendum, October 8, 2009, Section 7.2.1
calculations for the recycled water system, and system phasing plans. The overall recycled water program is described below.

As described in “Proposed Wastewater Treatment System,” on p. IV.K.10, the entire sanitary sewage flow would undergo primary and secondary treatment and disinfection at the wastewater treatment facility. The portion of the secondary effluent that would be used for recycled water would go through an additional (“tertiary”) treatment step at the facility’s recycled water plant. This step would involve microfiltration and, to the extent required, reverse osmosis. This effluent would meet California standards for recycled water.

Microfiltration employs a membrane with a pore size of approximately 0.1 micron. Solids accumulate on the membrane, and from time to time, the flow is reversed to remove the collected solids. The backwash would be directed to the headworks. Routine chemical cleaning would be necessary to remove foulants and maintain permeability.

Reverse osmosis would deal with the potential problem of saltwater intrusion into the wastewater collection system. Reverse osmosis involves a membrane separation treatment. The flow is pumped at high pressure across a membrane surface, producing an effluent with very low salt concentrations (e.g., about 98 percent salt removal). The salts are discharged as a concentrate. Engineers for the Proposed Project estimate that about 80 percent of the resulting tertiary treated effluent would be suitable for use as recycled water. The remaining approximately 20 percent would be discharged to the Bay through the existing outfall with the treated wastewater effluent. Routine chemical cleaning would be necessary to remove foulants and maintain permeability.

Reverse osmosis would be used when needed to remove salts. Ultraviolet light or chlorination would be used to disinfect the recycled water.

The recycled water plant would be large enough to meet the average long-term demand (estimated to range up to approximately 0.42 mgd, if residential toilet flushing is approved as a use for recycled water in all buildings, not just condominiums). An additional 0.84 million gallons of recycled water would be available as a supplemental source of firefighting water supply. (See Section K.4 for a description.) A 1.26-million-gallon storage tank would be constructed next to the recycled water plant.

During the initial phases of development and construction of the recycled water plant, potable water would be used when irrigation demand exceeds the supply of recycled water. The temporary connection of the potable water system to the recycled water distribution system would include a backflow prevention device approved by the SFPUC.

---

46 *Infrastructure Update*, Chapter 9, revision, August 25, 2009, Section 9.2.2.
Distribution piping for recycled water would be provided throughout Treasure Island, but not on Yerba Buena Island. Recycled water is not proposed to be supplied to Yerba Buena Island due to the island’s distance from the recycled water treatment plant and the pumping that would be required to reach its high elevations. See Figure II.16: Proposed Recycled Water Distribution System, in Chapter II, Project Description, p. II.62. Distribution pressure and flow requirements would be met with a hydro-pneumatic pressure system constructed near the storage tank at the recycled water plant. The pipe material would be selected to meet SFPUC requirements.

The Proposed Project assumes that recycled water would be used in residential buildings for toilet flushing to the extent permitted by applicable State and local laws and regulations. It is assumed that residential buildings would provide the necessary piping to allow that future use, along with any other recycled water use to the extent authorized at the time of construction, and the estimates for recycled water production outlined above would generate sufficient recycled water to support residential toilet flushing at a minimum. The Water Supply Assessment for the Proposed Project, described on p. IV.K.55, analyzed the Proposed Project both with and without use of recycled water.

- The California Department of Housing and Community Development allows the use of gray water (water from sinks, showers, and similar sources, captured for local reuse) in residential buildings under certain circumstances. Use of gray water is not part of the Proposed Project at this time; any future proposed use of gray water would conform to all applicable state and local requirements. Because it is not known where or whether these gray water sources would be used, they are not evaluated further in this EIR.

Project Impacts

Construction

Impact UT-4: Construction activities associated with the Proposed Project’s recycled water infrastructure could result in air quality, noise, water quality, transportation, hazardous materials, and biological impacts, as further evaluated under those EIR topics. (See significance determinations in other topics.)

---

47 California Code of Regulations, Title 24, Part 5, Chapter 16A, available via Oasis Design (web site), “California Graywater Standard: Chapter 16A Nonpotable Water Reuse Systems,” (with link to PDF of official text), available at http://www.oasisdesign.net/greywater/law/california/currentcode/, accessed Nov. 7, 2010. A few highlights are: (1) A gray water system limited to reuse of clothes washer water does not require a permit. Section 1603A.1.1. (2) “Simple systems” with a discharge of 250 gallons per day or less require a construction permit, unless exempted by the local enforcing agency. Section 1603A.1.2. (3) “Complex systems” are all other systems and may have more restrictions on them than the first two types of systems. Section 1603A.1.3.
The significance criterion on p. IV.K.17 indicates that the Proposed Project would have a significant adverse effect if it would require, or result in, the construction of new or upgraded wastewater recycling facilities, where the construction would cause significant environmental effects. Demolition, land clearing, grading, and other ground-disturbing construction activities would temporarily affect local air quality during each construction phase, causing temporary and intermittent increases in particulate dust and other pollutants. Operation of construction trucks and heavy equipment would create fugitive dust and emit nitrogen oxides, carbon monoxide, sulfur dioxide, reactive organic gases or hydrocarbons, and particulate matter, as a result of diesel
IV. Environmental Setting and Impacts
K. Utilities and Service Systems

fuel combustion. Use of hazardous materials in new construction could result in emissions of toxic air contaminants. Construction activities and heavy equipment would also cause temporary and intermittent increases in noise during each construction phase. Excavation may result in release of volatile contaminants in the ground or groundwater, and excavated soils could contain hazardous materials. Construction activities could pollute rainwater run-off from construction areas. Construction trucks and other vehicles could cause transportation impacts on local roads and/or the Bay Bridge. Construction activities could adversely affect biological resources.

Impacts of construction, including recycled wastewater facilities, and any relevant mitigation measures are discussed in Section IV.E, Transportation, pp. IV.E.67 – IV.E.71 (Impact TR-1); Section IV.F, Noise, pp. IV.F.14 – IV.F.20 (Impacts NO-1 and NO-2); Section IV.G, Air Quality, pp. IV.G.24-IV.G.38 (Impacts AQ-1 – AQ-4); Section IV.M, Biological Resources, pp. IV.M.41-IV.M.63 (Impacts BI-1 – BI-6); Section IV.O, Hydrology and Water Quality, pp. IV.O.35 – IV.O.41 (Impacts HY-1 – HY-7); and Section IV.P, Hazards and Hazardous Materials, pp. IV.P.39 – IV.P.51 (Impacts HZ-1 – HZ-9).

Operation

Impact UT-5: New recycled wastewater treatment and collection facilities would provide recycled water to reduce the Proposed Project’s water demand in conformance with City policies. (No Impact)

The Proposed Project’s provision of up an average of 420,000 gallons per day of recycled water, to be used for landscape irrigation and non-potable plumbing demands in commercial buildings, would reduce the daily demand for potable water from about 1.6 mgd to about 1.2 mgd. This would be a beneficial impact on regional water supplies. The operation of the proposed wastewater recycling plant, including the proposed uses of recycled water, would have to meet any permit requirements imposed by the RWQCB. In addition, they would have to meet the public health-related requirements of the CDPH, as would be imposed by the RWQCB permit, and the City’s recycled water rules and requirements. The CDPH requirements address the use of recycled water on crops meant for human consumption, such as those grown at the proposed Urban Agricultural Park. Therefore, no adverse environmental or public health impacts from the production or use of recycled water would be anticipated, and no mitigation is required.

Cumulative Impacts

Impact UT-6: Construction and operation of the Proposed Project including the recycled water plant would not significantly contribute to any cumulative impacts. (No Impact)

There would be no cumulative impacts regarding recycled water infrastructure.
K.3 STORMWATER COLLECTION AND TREATMENT

SETTING

Existing Stormwater Collection System

The SFPUC maintains and operates the stormwater collection system. Unlike most of San Francisco, Treasure Island has separate wastewater and stormwater collection systems. Some of the essential features of the existing stormdrain system are shown in Figure IV.K.2: Existing Stormdrain System. The existing stormwater collection system consists of 6- to 42-inch gravity (text continues on p. IV.K.23)
pipes and lift stations\textsuperscript{48} with outfalls of various sizes along the perimeters of the Islands. Pipes are made of PVC, asbestos cement, vitrified clay, reinforced concrete, and steel.\textsuperscript{49}

The outfalls discharge directly into San Francisco Bay. Treasure Island has approximately 31 outfalls, and Yerba Buena Island has approximately 32 outfalls. Currently, stormwater is not treated before it is discharged to the Bay.

**Regulatory Framework**

Federal and State laws and local policies govern water quality protection, as explained in Section IV.O, Hydrology and Water Quality, “Regulatory Framework,” p. IV.O.11. Applicable requirements described in that subsection are summarized below, along with additional information.

**Federal**

The Federal Clean Water Act addresses pollution from non-point sources, and includes managing such pollution through NPDES permits. The EPA has authority to issue NPDES permits for several categories of stormwater discharges, including discharges associated with industrial activity; discharges from municipal dischargers with populations equal to or exceeding 100,000; and discharges judged by the permitting authority to be significant sources of pollutants or which contribute to a violation of a water quality standard.\textsuperscript{50} Under this authority, the EPA requires municipal stormwater dischargers to obtain a municipal discharge permit for stormwater runoff.\textsuperscript{51} The EPA has issued a general NPDES permit\textsuperscript{52} for construction sites that would disturb 1 or more acres.\textsuperscript{53} The EPA has also issued a general NPDES permit (called the multi-sector general permit) for industrial facilities other than construction sites.\textsuperscript{54}

\textsuperscript{48} Lift stations lift the stormwater up to a level where it can flow by gravity. Pump stations put stormwater in pipes under pressure; such pipes are called force mains.

\textsuperscript{49} *Infrastructure Update*, Chapter 10, Section 10.1 (December 1, 2008).

\textsuperscript{50} Federal Clean Water Act section 402(p), added by the 1987 Water Quality Act.


\textsuperscript{52} Agencies use “general permits” because they save time and resources in dealing with a large number of facilities or sources that common elements. “In addition, the use of a general permit ensures consistency of permit conditions for similar facilities.” SWRCB, “National Pollution Discharge Elimination System (NPDES)” web page, http://www.waterboards.ca.gov/water_issues/programs/npdes/, accessed April 13, 2010.

\textsuperscript{53} 73 Federal Register 40338, July 14, 2008. This permit is a reissuance of the previous permit which was issued on July 1, 2003. See http://www.epa.gov/region09/water/npdes/stormwater.html, accessed April 13, 2010.

State

Municipal Separate Stormwater Sewer Systems (“MS4”) in San Francisco are subject to the Small Municipal Separate Storm Sewer System General Permit (General Permit, CAS000004) adopted by the SWRCB in 2003. The City and County of San Francisco is covered by the Phase II MS4 NPDES program, because the population served by separate stormwater sewers is less than 100,000. NPDES permits are valid for 5 years, and the Small MS4 General Permit expired in 2008. However, the permit remains in effect while the SWRCB revises the permit. As of December 2009, the SWRCB is gathering public input on a draft revised permit, and it is unclear when it will adopt the final permit.55

Under the draft MS4 NPDES permit, the volume-based design criterion for a structural Best Management Practice (“BMP”) is to treat 80 percent of annual runoff volume, which in San Francisco is a rainfall depth of approximately 0.70 inch.56 The flow-based design requirement is to treat flow resulting from two times the 85th percentile storm (or 0.20 inch/hour).57

As explained in Section IV.O, Hydrology and Water Quality, “Regulatory Framework,” p. IV.O.17, the SWRCB adopted a new General Construction Activity Permit for Discharges of Storm Water Runoff Associated with Construction Activity, on September 2, 2009, for construction activities that would disturb 1 acre or more of land.

The RWQCB also implements the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan), which has policies geared to protecting the beneficial uses of the Bay, such as recreation, industrial water supply, fishing, navigation, and wildlife habitat.58

Local

As explained in Section IV.O, Hydrology and Water Quality, “Regulatory Framework - Local,” on p. IV.O.20, the SFPUC has a Water Pollution Prevention Program and a Stormwater Management Plan.59 Both of these strive to reduce stormwater pollution. The SFPUC’s Urban Watershed Management Program oversees implementation of the Stormwater Design Guidelines.

57 Ibid.
59 See the cited pages of Section IV.O, Hydrology and Water Quality, for citations to Articles 4, 4.1, and 4.2 of the San Francisco Public Works Code.
As required by the NPDES General Permit, the SFPUC developed a Citywide stormwater management plan. Stemming from that effort, the SFPUC and the Port of San Francisco developed the San Francisco Stormwater Design Guidelines, for areas with separated sanitary and storm sewers, such as Treasure Island. The guidelines set forth a planning process for stormwater management and guidance for developing integrated, Low Impact Design (“LID”) solutions using site- and neighborhood-scale BMPs. The Stormwater Design Guidelines include seven principles:

1) Preserve and protect existing waterways, wetlands, and vegetation.
2) Preserve natural drainage patterns and topography and use them to inform design.
3) Think of stormwater as a resource, not a waste product.
4) Minimize and disconnect impervious surfaces.
5) Treat stormwater at its source.
6) Use treatment trains to maximize pollutant removal.
7) Design the flow path of stormwater on a site all the way from first contact to discharge point.

Under the Stormwater Design Guidelines, the volume-based design criterion for a structural BMP is to treat 90 percent of annual runoff volume, which in San Francisco is a rainfall depth of approximately 0.75 inch. This performance measure has been approved by the RWQCB for use in San Francisco. For flow-based designs, BMPs would be designed to accommodate a 0.2 inch per hour rainfall event, equivalent to the requirement contained in the City’s NPDES stormwater discharge permit.

In addition, under the Stormwater Control Ordinance, every development project must have a stormwater control plan that meets the criteria in the Stormwater Design Guidelines. The Ordinance provides for inspections, sampling, notification regarding spills, and enforcement.

The Environmental Protection Element and Community Facilities Element of the San Francisco General Plan contain objectives and policies relating to wastewater facilities:

---

61 Memorandum: Treasure Island Stormwater Update, December 1, 2009, pp. 3-4.
64 Stormwater Control Ordinance, Section 147.2.
65 Stormwater Control Ordinance, Section 147.4.
Environmental Protection Element

Objective 3: Maintain and improve the quality of the Bay, ocean and shoreline areas.

Policy 3.1: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay, Ocean, and Shorelines.

Policy 3.3: Implement plans to improve sewage treatment and halt pollution of the Bay and Ocean.

Community Facilities Element

Objective 10: Locate wastewater facilities in a manner that will enhance the effective and efficient treatment of storm and wastewater.

Policy 10.1: Provide facilities for treatment of storm and wastewater prior to discharge into the Bay or ocean. Locate such facilities according to the Wastewater and Solid Waste Facilities Plan.66

IMPACTS

Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to utilities, including storm drainage. The Planning Department’s Initial Study Checklist provides a framework of topics to be considered in evaluating potential impacts under CEQA. Implementation of a project could have a potentially significant impact related to stormwater facilities if it were to:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Approach to Analysis

The existing stormwater drainage on Treasure Island and Yerba Buena Island conveys runoff directly to the Bay without treatment. Pollutants in stormwater are, and would continue to be typical of urban runoff, with coarse sediments, soluble pollutants like plant nutrients, oil and

66 The Wastewater and Solid Waste Facilities Plan noted here in Policy 10.1 is a map that covers only mainland San Francisco. It does not include Treasure Island and Yerba Buena Island; therefore, the map provides no direction related to the Project Area.
grease, and heavy metals. The Proposed Project includes stormwater collection and treatment facilities that would reduce or remove these pollutants, as described below.

The proposed stormwater collection facilities would be designed to comply with the requirements of the City’s NPDES permit and sized to meet the SFPUC standards. Therefore, there would be no impact regarding adequacy of stormwater collection capacity, and this issue does not require further discussion or analysis.

Proposed stormwater treatment processes would be based on the SFPUC’s Stormwater Design Guidelines and would meet the RWQCB treatment requirements in the City’s NPDES permit. The BMPs would be more than what is typically made available to treat stormwater runoff, and would meet or exceed the requirements in the City’s existing MS4 permit. The Proposed Project would not exceed the wastewater treatment requirements of the RWQCB; therefore, there would be no impact related to stormwater treatment requirements, and this issue does not require further discussion.

Controlling stormwater pollution from rainwater runoff from streets and buildings depends upon a wide variety of approaches. Regulatory agencies have provided mandatory approaches and also an extensive menu of recommended BMPs. Evaluating whether the Proposed Project would sufficiently control stormwater pollution is done by comparing the approaches incorporated in a project with agency mandated approaches and recommended BMPs.

Proposed Project Facilities

A goal in the Sustainability Plan for Treasure Island is to treat stormwater on site. As discussed in Chapter II, Project Description, p. II.61, a Master Storm Drainage Plan and Stormwater Control Plan would be developed in accordance with SFPUC rules and regulations. The Stormwater Control Plan would cover all three levels of stormwater management planning: site design, source control, and structural BMPs. The basic stormwater collection and treatment systems are described below.

Proposed Stormwater Collection System

The existing stormwater collection system would be replaced with a new collection system, in phases, which would include gravity pipelines, force mains, lift stations, pump stations, and new outfalls to the Bay. Figure II.17: Proposed Stormwater Collection System, in Chapter II, Project Description, p. II.63, shows the preliminary pipeline sizing and approximate locations of the pump station and outfalls.

---

67 2006 Treasure Island Sustainability Plan, p. 59.
The proposed stormwater drainage collection system would be a combination of gravity lines, lift stations, pump stations, and outfalls to the Bay. The stormwater drainage collection system would be designed to meet the following criteria:

- Maintain the hydraulic grade line ("HGL") in general 2-feet, but no less than 1-foot, below pavement grades in new building areas during 5-year rain event and 100-year tide.
- Storm frequency larger than 5-year allowed to run in streets as overland flow.
- In open space areas, maintain HGL below grade during an average year rain event and 100-year tide elevation. Ponding would be allowed in the open space areas for larger rain events during a 100-year tide.
- Outfalls designed to handle 100-year overland release and wave overtopping.

The gravity pipelines would range from about 12 inches to 60 inches and would follow the proposed road layout on Treasure Island. Some of these pipes would direct flow to outfalls. The stormwater flow from the western side of Yerba Buena Island would be directed to two new outfalls and also to a gravity pipeline along the causeway to Treasure Island.

A pump station in the northwestern corner of Treasure Island would push flow through a 15-inch force main to the treatment wetlands in the northeast quadrant of Treasure Island. Similarly, a pump station on the eastern side of Treasure Island would direct a portion of the stormwater to the same treatment wetlands. The treatment wetlands are discussed below.

The pipe materials would be a combination of reinforced concrete for gravity pipelines and ductile iron with cathodic protection for the two proposed force mains. HDPE pipes could be used if approved by the SFPUC.

The storm drain pipes would be sized to accommodate rainwater flows from a 5-year storm. Stormwater flows resulting from a rainfall of 0.2 inch per hour ("treatment flows") would be directed through gravity and/or by pump stations to treatment areas. Flows larger than the treatment flows, up to the 5-year storm event, would flow in the pipes, bypassing the treatment devices, and flow directly to the Bay.

Flows larger than 5-year storm events would flow overland through the streets of the Project Area toward the open spaces around the perimeter of Treasure Island and Yerba Buena Island. The flows would collect in these areas and drain out to the Bay through overflow release or inlets attached to the 12 proposed new consolidated outfall structures serving Treasure Island and two serving Yerba Buena Island.

The Proposed Project is designed so as not to cause overland storm drainage onto the Job Corps site from the areas to be developed. Overland storm drainage release from the Job Corps

---

69 Infrastructure Update, Chapter 10, Section 10.2.2 (December 1, 2008).
campus and buildings would be maintained through the use of pump stations. The existing Job Corps pump station may need to be modified or relocated. Drainage from the Job Corps campus and buildings would be maintained during construction and permanently thereafter. Certain modifications to the storm drain system would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process.

The inlets and outfalls would be sized to accommodate the 100-year storm, and to account for higher tide elevations due to potential, future sea level rise.\textsuperscript{70} The outfall structures on Treasure Island would include a combination of an inlet sized to accommodate the 100-year overland release flow, a structure containing a “Tideflex” device to keep Bay water from backing up into the system during high tides, and an outfall structure into the Bay.\textsuperscript{71} Figure IV.K.3: Storm Drain Outfall – Plan View, and Figure IV.K.4: Storm Drain Outfall – Section, provide a conceptual design of the proposed outfall structures.

In some locations, the outfall locations would be designed to accommodate additional pump stations that could be installed in the future to respond potential future sea level rise.

\textit{Proposed Stormwater Treatment System - Treasure Island}

A portion of the proposed stormwater system is shown in Figure IV.K.5: Proposed Stormwater Treatment Wetland. The proposed stormwater treatment system is based on SFPUC and RWQCB requirements. Treatment is required to the maximum extent practicable, by applying recommended BMPs.

Because the Proposed Project would have separate sanitary and stormwater sewers, the SFPUC’s Stormwater Management Plan and Stormwater Control Ordinance would apply. The Plan requires that BMPs be applied.

BMP selection and treatment strategies for each area are described below. Additional BMPs incorporated within the vertical development parcels and buildings would be considered supplemental additions to the treatment train and would not be required, except in cases where adequate treatment would not be provided to the maximum extent practicable in the horizontal infrastructure. All BMPs would be designed to comply with the Stormwater Management Ordinance and Stormwater Design Guidelines. In addition to localized BMPs, and block-scale to neighborhood-scale treatment measures, the system also includes a stormwater treatment wetland.

\textsuperscript{70} The stormdrain system would be designed based on the current 100-year tide elevation. If sea level rise increases to a point where the 5-year rain event does not stay below ground on Treasure Island, the storm drain system would need to be retrofitted with pump stations at the outfalls. Therefore, the outfalls would be designed to accommodate addition of pump stations in the future, if required. \textit{Infrastructure Update}, Chapter 10, section 10.2.4, (December 1, 2008).

\textsuperscript{71} \textit{Infrastructure Update}, Chapter 10, Section 10.2.4, (December 1, 2008).
FIGURE IV.K.4: STORM DRAIN OUTFALL - SECTION

IV.K.31
Treatment Wetland. A 10- to 15-acre treatment wetland would be located in the northeast corner of Treasure Island. The wetland area would serve as both a stormwater treatment area during the rainy months and as a wildlife habitat area for Treasure Island year round. Figure IV.K.5 shows the location and conceptual design of the treatment wetland. The final design and size would be based on the treatment requirements for discharge of stormwater set by the RWQCB in compliance with the City’s NPDES discharge permit and in accordance with its Stormwater Design Guidelines. The final location and configuration of the wetland would depend on a number of factors, including size relative to contributing watersheds, soil contamination, groundwater, public access, open space plans, and storm drainage infrastructure design.

The wetland system would be designed to treat 90 percent of average annual runoff on a volumetric basis (0.75 inches per unit area). The drawdown time for stormwater to be treated would be a minimum of 48 hours.

Stormwater would enter the wetland system through diversion structures with lift stations. It would first encounter sedimentation forebays that would collect trash and larger sediments. The forebays would also provide a place to clean up dry-season contamination or spills before they enter the rest of the system. Flow out of the forebays would be controlled by a weir structure.

The flow would proceed through low-flow channels and swales to the permanent pool. The permanent pool would promote both aerobic and anaerobic zones to enhance pollutant removal (e.g., oxidation by microorganisms). The recommended minimum permanent pool size is twice the treatment volume. Based on current estimates, it would be between 3 and 6 acres, with a minimum depth of 5 feet. The depth would discourage unwanted vegetation growth (such as cattails), but this depth would intersect the groundwater table. Regarding the possibility of contaminated groundwater polluting the stormwater, see Section IV.P, Hazards and Hazardous Materials, p. IV.P.44-IV.P.45.

The perennial wetlands would remain moist or wet throughout the year. Any desired permanent water level during the dry months would be maintained with water from the recycled water system, preliminarily estimated as about 29,000 gallons per day.

---

72 For example, excavation for wetlands and ponds may be limited by the presence of contaminated groundwater at Site 24, known as the Dry Cleaning Facility. See Section IV.P, Hazards and Hazardous Materials for discussion of contamination and its remediation.
73 Infrastructure Update, Chapter 10, Addendum #1, May 11, 2009 (“Infrastructure Update, Chapter 10, Addendum #1”), p. 1.
74 Memorandum: Treasure Island Stormwater Update, December 1, 2009, pp. 3-4 (stating that the SFPUC staff has verbally indicated acceptance of the draft MS4 NPDES permit flow-through requirement).
75 Ibid., p. 2.
76 Ibid., p. 2.
77 Ibid., p. 2.
78 Ibid., p. 2.
Seasonal wetland areas—meadow-like areas that would flood during the rainy season—would be created adjacent to the main, permanent wetland pool to provide additional treatment and habitat area. Water from the main perennial pool would expand into the seasonal areas during and after storm events. Pollutants would be removed through settling, adsorption, filtering, and nutrient uptake by wetland vegetation.

The stormwater wetland system would discharge to the Bay. An outfall or weir would control the discharge. If necessary, a lift station would lift the effluent for discharge.

The wetlands would provide habitat for a range of flora and fauna, including migratory birds. (See Section IV.M, Biological Resources.) Public access would be provided to the stormwater wetland area. In some parts of the wetlands, low fences may be needed to separate people and dogs from the habitat areas and to ensure public safety. Signs would be posted to advise visitors that the water is non-potable. Access to the habitat areas in the wetlands would also be controlled with pathways and planting.

An Integrated Pest Management program for Treasure Island would include vector control for the wetland area. Mosquitofish would be used, and plants that attract mosquitoes would be avoided, while plants that repel mosquitoes would be used. The edges of permanent pool areas of the wetlands would be designed to allow access to mosquito predators. In addition, water levels in the wetland would be varied to discourage mosquito development by occasional drawdown at some times and augmentation with recycled water at other times. Vegetation maintenance would reduce breeding habitat.

**Best Management Practices.** BMPs would be selected, sized, and designed in relation to localized building sites and land spaces in each of several stormwater watersheds for Treasure Island and Yerba Buena Island. Some BMPs would be structural, like a control device, and others would be non-structural, like a maintenance activity.

**Structural BMPs.** Structural BMPs are designed based on flow or volume.79 In flow-based design, water is treated by flowing through vegetation or filtration media. Examples are bioretention areas, flow-through planters, and vegetated swales. In volume-based design, water is treated by detention and settlement. Examples are extended detention basins and treatment wetlands.

In addition to the stormwater treatment wetland, “localized” stormwater runoff BMP treatment techniques are proposed to provide treatment for stormwater in Stormwater Treatment Areas (as

---

79 *Memorandum: Treasure Island Stormwater Update*, December 1, 2009, p. 3.
shown on Figure IV.K.6: Treasure Island Stormwater Treatment Areas. The treatment techniques could include, but are not limited to:\(^{80}\)

- **Bio-retention.** Bio-retention areas are vegetated systems that rely on soil infiltration and biogeochemical processes to slow, store, and remove pollutants from stormwater. Examples are soil- and plant-based filtration devices, including a planted buffer strip, a sand bed, a ponding area, and a planted area with an organic (or mulch) layer and planting soil.

- **Constructed wetland.** As discussed above, the Proposed Project would include a constructed wetland. Such wetlands collect and purify stormwater through microbial transformation, plant uptake, settling, and adsorption of pollutants.

- **Vegetated swale.** A vegetated swale is a broad, shallow channel with plants on the sides and bottom to collect and slowly convey rainwater runoff, with treatment provided through filtering by the vegetation and soil or infiltration into the underlying soils.

- **Vegetated buffer strip.** Vegetated buffer strips are sloping planted areas designed to treat and infiltrate sheet flow from adjacent impervious areas.

- **Infiltration basin.** An infiltration basin is a shallow impoundment over permeable soil that captures stormwater, stores it, and allows it to infiltrate. These function like bio-retention areas, but are usually larger.

- **Infiltration trench.** An infiltration trench is a long, narrow, rock-filled trench that allows stormwater to infiltrate.

- **Permeable pavement.** Permeable pavement is a paving system that includes an underlying layered structure to temporarily store rainwater prior to infiltration or drainage to a collection facility. Examples are porous asphalt, porous concrete, interlocking concrete blocks, or grass pavers.

- **Vegetated roofs.** Vegetated roofs are covered partially or entirely with vegetation and soils. These filter contaminants. They also absorb stormwater, thereby reducing runoff, and they slow stormwater, thereby delaying the peak flow.

- **Rain water harvesting.** Rain water harvesting is the practice of collecting rainwater from impervious surfaces, such as roofs or patios, and using it for irrigation. There is uncertainty about legislation regarding the practice, and practical disadvantages regarding storage and timing.

**Source Control and Operational BMPs.** The Stormwater Control Plan for Treasure Island and Yerba Buena Island would include source control measures that would be used to limit the amount of pollutants entering stormwater runoff. Effective control of pollutants before they enter stormwater would reduce the loading of pollutants on structural BMPs, and would result in a decrease in pollutant load subsequent to structural BMPs. Source control and operational BMPs that would be implemented as part of the Proposed Project in all areas are summarized below.

---

\(^{80}\) Memorandum: Treasure Island Stormwater Update, December 1, 2009, pp. 15-16.
KEY

A  STREET RIGHTS OF WAY
B$^1$  MIXED USED URBAN CORE AND MARINA DISTRICT
B$^2$  ELEMENTARY SCHOOL SITE
B$^3$  WASTEWATER TREATMENT FACILITY
C  CITY SOUTH RESIDENTIAL AREA
D  NORTH AND EAST RESIDENTIAL AREAS
E  URBAN AGRICULTURAL PARK, SPORTS PARK AND GENERAL OPEN SPACE AREAS
F  SEASONAL WETLAND AREA

SOURCE: CMG

FIGURE IV.K.6: TREASURE ISLAND STORMWATER TREATMENT AREAS

IV.K.36
IV. Environmental Setting and Impacts
   K. Utilities and Service Systems

- Install and maintain trash screens on all storm system inflows, and/or at key points along the stormwater system, to provide effective trash removal;
- Implement a street sweeping program to remove trash, leaves, sediment, and other pollutants from roadways;
- Implement maintenance requirements for landscaping that minimize the use of fertilizers, pesticides, and herbicides;
- Implement an animal waste reduction plan, including requirements for the appropriate disposal of dog wastes; and
- Disconnect catch basins and inlets from paved impervious infrastructure where feasible.

Combinations of structural BMPs are expected to be used in each Stormwater Treatment Area. The options for localized stormwater treatment, along with the stormwater treatment wetland, will be reviewed in detail with SFPUC and the RWQCB. Figure IV.K.6 shows the proposed Treasure Island Stormwater Treatment Areas by letter. The proposed menu of possible BMPs by area is summarized below:81

- **Area A, Public streets**: Street-side bio-retention areas.
- **Area B1, Mixed use urban core and Marina District**: Bio-retention, vegetated swale, vegetated buffer strip, infiltration trench, permeable pavement, vegetated roofs, rainwater harvesting where feasible.
- **Area B2, Elementary school site**: Bio-retention, constructed wetland, vegetated swale, vegetated buffer strip, infiltration basin, infiltration trench, permeable pavement, vegetated roofs, rainwater harvesting where feasible.
- **Area B3, Wastewater treatment plant**: Constructed wetland, vegetated swale, vegetated buffer strip, infiltration basin, infiltration trench, permeable pavement, vegetated roofs, rainwater harvesting where feasible.
- **Area C, City south residential area**: Bio-retention, vegetated swale, rainwater harvesting where feasible.
- **Area D, North and east residential areas**: Constructed wetland, bio-retention, rainwater harvesting where feasible.
- **Area E1, Urban farm, sports park, and general open space areas**: Bio-retention, constructed wetland, vegetated swale, vegetated buffer strip, infiltration basin, infiltration trench, permeable pavement, vegetated roofs, rainwater harvesting where feasible.

**Proposed Stormwater Treatment System - Yerba Buena Island**

Stormwater controls on Yerba Buena Island would include erosion control measures, given the steep topography of much of that island. The BMPs would be based on the SFPUC’s *Stormwater Design Guidelines*, and could include bioretention/infiltration planters and swales, rain gardens, and permeable paving, and rainwater harvesting where feasible.

---

81 *Memorandum: Treasure Island Stormwater Update*, December 1, 2009, pp. 7-12.
The proposed menus of possible BMPs for the Development Plan areas of Yerba Buena Island are summarized below:82

- **Public streets, roads, and parking areas**: Bio-retention, vegetated swale.
- **Housing and hotel**: Bio-retention, vegetated swale, vegetated buffer strip, permeable pavement, vegetated roofs, rainwater harvesting where feasible.
- **Existing historic buildings and site areas**: Bio-retention, vegetated swale, vegetated buffer strip, permeable pavement, vegetated roofs, rainwater harvesting where feasible.
- **Open space areas**: Bio-retention, vegetated swale, vegetated buffer strip, permeable pavement, vegetated roofs, rainwater harvesting where feasible.

**Project Impacts**

**Impact UT-7**: Construction activities associated with the Proposed Project’s stormwater infrastructure could result in air quality, noise, water quality, transportation, hazardous materials, and biological impacts, as further evaluated under those EIR topics. *(See significance determinations in other topics.)*

The second significance criterion, identified on p. IV.K.25, indicates that the Proposed Project would have a significant adverse effect if it would require, or result in, the construction of new stormwater collection or treatment facilities, where the construction would cause significant environmental effects. Demolition, land clearing, grading, and other ground-disturbing construction activities would temporarily affect local air quality during each construction phase, causing temporary and intermittent increases in particulate dust and other pollutants. Operation of construction trucks and heavy equipment would create fugitive dust and emit nitrogen oxides, carbon monoxide, sulfur dioxide, reactive organic gases or hydrocarbons, and particulate matter, as a result of diesel fuel combustion. Use of hazardous materials in new construction could result in emissions of toxic air contaminants. Construction activities and heavy equipment would also cause temporary and intermittent increases in noise during each construction phase. Excavation may result in release of volatile contaminants in the ground or groundwater, and excavated soils could contain hazardous materials. Construction activities could pollute run-off from construction areas. Construction trucks and other vehicles could cause transportation impacts on local roads and/or the Bay Bridge. Construction activities could adversely affect biological resources.

Impacts of construction, including stormwater facilities, and applicable mitigation measures are discussed in Section IV.E, Transportation, pp. IV.E.67 – IV.E.71 (Impact TR-1); Section IV.F, Noise, pp. IV.F.14 – IV.F.20 (Impacts NO-1 and NO-2); Section IV.G, Air Quality, pp. IV.G.24-IV.G.38 (Impacts AQ-1 – AQ-4); Section IV.M, Biological Resources, pp. IV.M.41-IV.M.63 (Impacts BI-1 – BI-6); Section IV.O, Hydrology and Water Quality, pp. IV.O.35 – IV.O.41

Cumulative Impacts

Impact UT-8: Construction and operation of the Proposed Project would not significantly contribute to cumulative infrastructure deficits or result in the exceedance of stormwater discharge requirements.  (No Impact)

The Proposed Project would not cause infrastructure deficits at Treasure Island and Yerba Buena. In addition, RWQCB requirements would be met. The other construction projects proposed for Yerba Buena Island would not substantially change the demand for stormwater collection and treatment. Therefore, there would be no cumulative impacts regarding stormwater collection and treatment facilities.

K.4 WATER SUPPLY AND DISTRIBUTION SYSTEM (POTABLE AND FIRE-FIGHTING)

SETTING

Regional Water System

Water for the Project Area is provided by the SFPUC, which manages a complex Regional Water System that provides water to approximately 2.5 million people in San Francisco, including Treasure Island and Yerba Buena Island, and in Santa Clara, San Mateo, Alameda, and Tuolumne Counties. The Regional Water System consists of three integrated water supply and conveyance systems: the Hetch Hetchy, Alameda, and Peninsula systems. The SFPUC is currently implementing the Water System Improvement Program (“WSIP”) to provide improvements to its water infrastructure.

Sources of Water Supply

The sources of the City’s water supply consist primarily of surface water sources. Other, supplemental sources, such as water recycling and desalination, are being developed, and water efficiency measures will allow the existing water supply to serve an increased number of users.

The Regional Water System delivers an annual average of approximately 265 mgd to its customers. Approximately 85 percent of that water supply is provided by the Hetch Hetchy system, which diverts water from the Tuolumne River. The balance (approximately 15 percent)

---

83 San Francisco Public Utilities Commission, Final Water Supply Assessment for the Proposed Treasure Island – Yerba Buena Island Project, prepared by PBS&J, November 2009 (hereinafter referred to as “WSA”), p. 2-3. A copy of the WSA is found in Appendix I in this EIR.
comes from runoff in the Alameda Creek watershed, which is stored in the Calaveras and San Antonio Reservoirs, and runoff from the San Francisco Peninsula, which is stored in the Crystal Springs, San Andreas, and Pilarcitos Reservoirs. A small portion of demand, primarily in San Francisco, is met with locally produced groundwater used for irrigation at local parks and on highway medians, and with recycled water, which is used for wastewater treatment process water, sewer box flushing, and similar wash-down operations.

**Groundwater**

San Francisco overlies all or part of seven groundwater basins: the Lobos, Marina, Downtown, and South basins, located wholly within the City limits, and the Islais Valley, Westside, and Visitacion Valley basins which extend south into San Mateo County. Except for the Westside and Lobos basins, all of the groundwater basins are generally inadequate to supply a significant supply of groundwater for municipal supply due to low yield.

The SFPUC is currently studying implementation of the San Francisco Groundwater Supply Project, created as part of the Water System Improvement Program to expand use of the local groundwater source to provide ongoing supply and to improve reliability during droughts, maintenance conditions, and after an earthquake or other emergency.

**Recycled Water**

For 50 years prior to 1981, San Francisco’s McQueen Treatment Plant provided recycled water to Golden Gate Park for irrigation. Because of changes in water quality regulations, the City closed the McQueen plant and discontinued use of recycled water in Golden Gate Park. Currently, disinfected secondary-treated84 recycled water from the SFPUC’s Southeast Water Pollution Control Plant is used on a limited basis for wash-down operations in the combined sewer system and is also provided to construction contractors for dust control and other construction purposes. Current use of recycled water for these purposes in San Francisco is less than 1 mgd.85

In March 2006, the SFPUC updated the *Recycled Water Master Plan* for the City. The 2006 *Recycled Water Master Plan* identified where and how San Francisco could most feasibly develop recycled water in the City and provided strategies for implementing the recycled water projects that were identified. The SFPUC plans to continue to diversify San Francisco’s water supply portfolio by increasing the use of local water sources, such as recycled water, groundwater, water conservation, and desalination.

---

84 Effluent from the plant has undergone both primary and secondary treatment, meaning that floatable materials (such as oil and grease), settleable materials (such as sand and gravel) and a substantial portion of the organic compounds in the waste stream have been removed. In San Francisco, chlorine is used to kill bacteria, and the chlorine is removed before the effluent is used as recycled water.

85 WSA, p. 2-5
The San Francisco Recycled Water Program currently includes the Westside, Harding Park, and Eastside Recycled Water Projects. These proposed projects would provide up to 4 mgd of recycled water to a variety of users in San Francisco. Recycled water would primarily be used for landscape irrigation, toilet flushing, and industrial purposes. Currently, the SFPUC is conducting a recycled water demand assessment on the east side of San Francisco. The Water System Improvement Program contains funding for planning, design, and environmental review of the San Francisco Eastside Recycled Water Project.

Desalination

The SFPUC’s consideration of desalination as a water supply source has focused primarily on the potential for regional facilities. The proposed Bay Area Regional Desalination Project is a joint venture between the SFPUC, Contra Costa Water District, East Bay Municipal Utility District (“EBMUD”), and the Santa Clara Valley Water District. The regional desalination project would provide an additional source of water during emergencies, provide a supplemental source during extended droughts, allow other major water facilities to be taken out of service for maintenance or repairs without disrupting service, and increase supply reliability by providing water supply from a regional facility. The Bay Area Regional Desalination Project would have an ultimate total capacity of up to 65 mgd.86

Water Conservation

The SFPUC is committed to demand-side management87 programs and the City’s per capita water use has dropped by about one-third since 1977 due, in part, to these programs.88 The first substantial decrease occurred following the 1976-77 drought. Gross per capita water use dropped from 160 gallons to 130 gallons per capita per day. Despite continuous growth in the City since then, water demands have remained lower than pre-drought levels. In addition to plans for repairs and improvements to the water supply system infrastructure, the Water System Improvement Program calls for increased water conservation. The SFPUC’s current demand management programs range from financial incentives for plumbing devices to improvements in the distribution efficiency of the system. The conservation programs implemented by the SFPUC are based on the California Urban Water Conservation Council’s list of 14 BMPs:

- BMP 1 – Water Survey Programs for Single- and Multi-Family Residential Customers
- BMP 2 – Residential Plumbing Retrofit
- BMP 3 – System Water Audits, Leak Detection and Repair
- BMP 4 – Metering with Commodity Rates for all New Connections
- BMP 5 – Large Landscape Conservation Programs and Incentives

---

86 WSA, p. 3-5.
87 Demand-side management involves programs that discourage water use and encourage conservation, with the objective of reducing overall water demand.
88 WSA, p. 2-5.
• BMP 6 – High Efficiency Washing Machine Rebate (under investigation)
• BMP 7 – Public Information Programs
• BMP 8 – School Education Program
• BMP 9 – Conservation Programs for Commercial, Industrial, and Institutional Accounts
• BMP 10 – Wholesale Agency Assistance Programs
• BMP 11 – Conservation Pricing
• BMP 12 – Conservation Coordinator
• BMP 13 – Water Waste Prohibition
• BMP 14 – Residential Ultra Low Flow Toilet Replacement Program

With this conservation program, the SFPUC anticipates reducing gross per-household consumption from 91.5 gallons per capita per day in 2009 to 87.4 gallons per capita per day by 2018, which would result in a conservation supply potential of approximately 4.0 mgd annually.

**Water Supply Reliability Planning**

To enhance the reliability of the Regional Water System, improve dry-year supplies, diversify the water supply portfolio, and meet projected wholesale and retail demand through 2030, the SFPUC developed the Water System Improvement Program (“the program” in this subsection) in 2005. Under this program as originally developed, the SFPUC proposed to meet projected 2030 average daily purchase requests of 300 mgd in the Regional Water System service area by increasing diversions from the Tuolumne River under its existing water rights and developing new local resources through a combination of additional conservation, water recycling, and groundwater supply programs. The program proposed various water facility improvement projects to achieve stated public health, seismic safety, delivery reliability and water supply goals. It also included provisions for obtaining additional dry-year supplies. The Program Environmental Impact Report (PEIR) for the Water System Improvement Program identified and analyzed potential impacts that would result from implementation, including the diversion of an additional 35 mgd annual average from the Tuolumne River, along with several water supply combinations that could meet future demand. After certification of the Final PEIR by the Planning Commission on October 30, 2008, the SFPUC adopted the Phased Water System Improvement Program option.

The Phased Water System Improvement Program would meet projected 2018 demand of approximately 285 mgd by capping deliveries from the Regional Water System at 265 mgd, with 184 mgd allocated to wholesale customers and 81 mgd allocated to retail customers. The remaining 20 mgd of demand would be met through water conservation, recycling and groundwater, with 10 mgd provided by wholesale customers and 10 mgd provided by local projects within San Francisco. Improved dry-year supplies would be provided via implementation of the Westside Groundwater Basin Conjunctive Use Project (in San Mateo County), and less than 2 mgd in water transfers. The 10 mgd of local supply committed to by the

--

89 WSA, p. 2-6.
IV. Environmental Setting and Impacts  

K. Utilities and Service Systems  

SFPUC upon adoption of the Phased Water System Improvement Program would be provided through development of local water supply improvements.

**Water Treatment Capacity**

Water from the Hetch Hetchy system is delivered to customers without filtration. Water from the Alameda system is treated at the Sunol Valley Water Treatment Plant (“Sunol Valley WTP”), located in Alameda County. Peninsula system water and any Hetch Hetchy or Alameda system water stored in Peninsula reservoirs is treated at the Harry Tracy WTP, located in northern San Mateo County. These treatment plants have existing treatment capacities of 160 mgd and 120 mgd, respectively. To ensure treatment capacity into the future, the SFPUC is planning to upgrade the Sunol Valley WTP to reliably treat 160 mgd and increase the plant’s storage capacity of treated water. The SFPUC is also currently designing an expansion of the Harry Tracy WTP to reliably deliver 160 mgd, which would increase the total treatment capacity of the Regional Water System to 320 mgd. These projects would further the delivery reliability goals identified by the SFPUC as part of the Phased Water System Improvement Program by allowing the SFPUC to deliver water to meet demands during maintenance of the Hetch Hetchy system and in the event of an emergency resulting in the temporary loss of the Hetch Hetchy system supply. In addition, SFPUC has initiated construction of the Tesla advanced disinfection treatment facility in Tracy, California, to provide advanced disinfection of water from the Hetch Hetchy system.

**Water Shortage and Dry-Year Planning**

To ensure that water could be delivered continuously throughout a drought, the SFPUC has adopted a drought planning sequence and associated operating procedures that trigger different levels of water delivery reductions relative to the volume of water stored in SFPUC reservoirs. Each year, during the snowmelt period, the SFPUC evaluates the amount of total water storage expected to occur throughout the Regional Water System. If this evaluation finds the projected total water storage to be less than a level sufficient to provide sustained deliveries, the SFPUC may impose delivery reductions or rationing. The amount of reduction has been established in contractual agreements between the SFPUC and its customers in the Water Shortage Allocation Plan. The SFPUC has adopted the Retail Water Shortage Allocation Plan to formalize the three-stage program of action to be taken in San Francisco. During a shortage of between 5 to 10 percent (Stage 1), SFPUC retail customers would experience no reduction in deliveries, but the SFPUC would issue a voluntary rationing request to customers, alert customers to water supply conditions, remind them of existing water use prohibitions, and provide education on, and possible acceleration of, incentive programs. For a shortage of between 10 to 20 percent (Stage 2), retail customers would experience a 1.9 percent reduction in retail deliveries. During Stage 2, all Stage 1 measures would be implemented, customers would receive a specific allotment of water, and if a customer’s water use goes above their allotment, they would be subject to an
excess use flow restrictor device and shut-off of water. For shortages in excess of 20 percent (Stage 3), all Stage 2 measures and additional reductions in retail allotments would be implemented, as determined by the SFPUC.

**Current and Future Water Supplies**

As discussed above on p. IV.K.41, the Phased Water System Improvement Program allocates 81 mgd to retail customers. In addition, approximately 3.5 mgd of groundwater is currently obtained from local groundwater basins. Per the Phased Water System Improvement Program, an additional 10 mgd would be provided in the future from local groundwater and recycled water projects and from conservation measures that reduce demand. Table IV.K.1: SFPUC Estimated Retail Water Supplies, 2010–2030 with Normal Rainfall, provides an estimate of retail water supplies from 2010 through 2030. As shown in the table, water supply is projected to increase from 84.5 mgd in 2010 to 94.5 mgd in 2015 (at completion of the Water System Improvement Program projects) and to remain at that level through 2030. As described above, the program includes development of dry-year supplies for the Regional Water System. These supplies would be readily available during dry years when the watershed supplies are cut back due to below-normal precipitation. The PEIR also included an analysis of dry-year water supply transfers from the senior water rights holders (Modesto Irrigation District and Turlock Irrigation District) on the Tuolumne River in 2018; a groundwater conjunctive use project; and a regional desalination project. The SFPUC is currently investigating the possibility of a dry-year transfer with Modesto Irrigation District and Turlock Irrigation District in 2018.

**Current and Future Water Demand**

The SFPUC prepared and adopted an *Urban Water Management Plan* (UWMP) in 2005 as required by state law.90 Since that time, development projects have been proposed that were not contemplated when the 2005 UWMP was adopted. To update the water supply and demand estimates provided in the 2005 UWMP, the SFPUC conducted a *Water Supply Availability Study*.91 The study incorporates new water supply information (from the Phased Water System Improvement Program) and generates new estimates of future water demand for San Francisco. The future water demand estimates are based on the most current population and employment estimates, which include the Proposed Project and other major development proposals not anticipated in the 2005 UWMP. To update future water demand, the *Water Supply Availability Study* compared the estimates of residential households and employees used in the 2005 UWMP with new population and employment forecasts provided by the San Francisco Planning Department. These forecasts were designed to closely match the recently adopted

---

90 California Water Code Section 10610.4.
91 WSA, p. 4-2 and WSA Appendix D.
Table IV.K.1: SFPUC Estimated Retail\textsuperscript{1} Water Supplies, 2010–2030 with Normal Rainfall

<table>
<thead>
<tr>
<th>Water Supply Sources</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Surface Water Supply Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFPUC RWS (Surface water: Tuolumne River, Alameda &amp; Peninsula)</td>
<td>81.0</td>
<td>81.0</td>
<td>81.0</td>
<td>81.0</td>
<td>81.0</td>
</tr>
<tr>
<td><strong>Current Groundwater Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater (In-City Irrigation Purposes)</td>
<td>2.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Groundwater - Other Retail Users</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Groundwater: Treated for Potable—Previously used for In-City Irrigation purposes</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Groundwater Subtotal</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Current Water Supply Subtotal</strong></td>
<td>84.5</td>
<td>84.5</td>
<td>84.5</td>
<td>84.5</td>
<td>84.5</td>
</tr>
<tr>
<td><strong>Future Water Supply Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater Development: Potable from SF GWSP (Westside Groundwater Basin)\textsuperscript{1}</td>
<td>0.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Recycled Water Expansion for Irrigation</td>
<td>0.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Conservation Supply Program</td>
<td>0.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>WSIP Supply Subtotal</td>
<td>0.0</td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total Retail Supply (Current and WSIP Supplies)</strong></td>
<td>84.5</td>
<td>94.5</td>
<td>94.5</td>
<td>94.5</td>
<td>94.5</td>
</tr>
</tbody>
</table>

\textbf{Note:}

\textsuperscript{1} SFPUC’s retail customers are homes and businesses, mostly in San Francisco, served directly by the SFPUC. Retail customers also include Treasure Island and customers outside the City at the San Francisco Airport, the Town of Sunol, Lawrence Livermore Laboratories, Castlewood, and Groveland Community Services District.


Association of Bay Area Governments Projections 2009 target, and take into account local knowledge of projects currently in various stages of the entitlement process. Updated water demand estimates were then generated, which included the increment of future growth that was not previously included in the 2005 UWMP estimates.

Estimates of water demand for major development proposals\textsuperscript{92} in San Francisco were based on information provided by project proponents. The water demand estimates were included in the WSA prepared for the Proposed Project.

\textsuperscript{92} Treasure Island – Yerba Buena Island Area Plan/SUD, Parkmerced Project, and Candlestick Point-Hunters Point Shipyard Phase II Project.
Table IV.K.2: SFPUC Estimated Average Annual Retail Water Demand, provides an estimate of total SFPUC retail\(^3\) water demands from 2010 through 2030, which incorporates the most recent new residential development estimates from 2015 through 2030, and assumes some development not previously included in the 2005 UWMP estimates, including the proposed Candlestick Point-Hunters Point Shipyard project, the proposed Parkmerced project, and other incremental growth throughout San Francisco.\(^4\) Total retail water demand, including Project Area demand, is estimated to increase from 91.81 mgd in 2010 to approximately 93.42 mgd by 2030.

<table>
<thead>
<tr>
<th>Users, Facilities, and Entities</th>
<th>Projected Water Demand (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>San Francisco Residential Demand (Single and Multiple Family)</td>
<td>44.70</td>
</tr>
<tr>
<td>New San Francisco Residential Demand (Generated by Projects and Incremental Growth)</td>
<td>—</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>44.70</strong></td>
</tr>
<tr>
<td>Non-Residential - Business/Industrial San Francisco</td>
<td>30.21</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>74.91</strong></td>
</tr>
<tr>
<td>Unaccounted-for System Losses</td>
<td>7.30</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>82.21</strong></td>
</tr>
<tr>
<td>Other Retail Demands</td>
<td>4.90</td>
</tr>
<tr>
<td>Lawrence Livermore Laboratory; Groveland Community Services District</td>
<td>1.20</td>
</tr>
<tr>
<td>City Irrigation</td>
<td>2.5</td>
</tr>
<tr>
<td>Castlewood Community</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total Retail Demand</strong></td>
<td><strong>91.81</strong></td>
</tr>
</tbody>
</table>

**Notes:**
1. SFPUC’s retail customers are homes and businesses, mostly in San Francisco, served directly by the SFPUC. Retail customers also include Treasure Island and customers outside the City at the San Francisco Airport, the Town of Sunol, Lawrence Livermore Laboratories, Castlewood, and Groveland Community Services District.
2. Numbers are rounded according to standard rounding practices and may not add up due to hidden decimals.

**Source:** PBS&J, *Final Water Supply Assessment for the Proposed Treasure Island – Yerba Buena Island Project*, November 2009, Table 4-8, p. 4-9.

\(^3\) SFPUC’s retail customers are homes and businesses, mostly in San Francisco, served directly by the SFPUC. Retail customers also include Treasure Island and customers outside the City at the San Francisco Airport, the Town of Sunol, Lawrence Livermore Laboratories, Castlewood, and Groveland Community Services District.

\(^4\) WSA Appendix A, Section 5.1, pp. 21-22.
Water Conveyance and Distribution System

Water is distributed within San Francisco by the SFPUC’s distribution system. The City’s internal distribution system is divided into the Eastside (roughly from Twin Peaks to the Bay) and the Westside (roughly from Twin Peaks to the ocean). San Francisco’s water supply is delivered to the City in several major pipelines and stored in reservoirs located within the City. Water is delivered to the Eastside of the distribution system by the Crystal Springs pipeline and stored in the University Mound Reservoir. Several smaller reservoirs, in addition to storage tanks and pumps, provide water to individual distribution zones based on elevation.

Treasure Island and Yerba Buena Island have two sources of water. The primary supply is provided by the SFPUC’s water distribution system in San Francisco. An emergency supply is provided by EBMUD.

Water from the SFPUC system is delivered to Treasure Island / Yerba Buena Island through a 10-inch-diameter steel pipe attached to the west span of the Bay Bridge. Water is pumped across the bridge by a pumping station located on Spear Street in San Francisco. The station contains four pumps, each rated at 900 gallons per minute (“gpm”). The station can run a maximum of two pumps at a time for a maximum output of 1,800 gpm. The SFPUC chloraminates this water prior to transmission; additional treatment on Treasure Island is not required. A standby booster station is available for emergencies where the pipeline touches down on Yerba Buena Island. The SFPUC provides water for the Job Corps campus and the Coast Guard Station and Sector Facility.

The emergency water supply is provided by EBMUD through a 12-inch-diameter, ductile iron, main pipeline connected to an EBMUD water meter at Beach Street in Oakland. From the water meter, the 12-inch main is owned and maintained by the Navy. The main delivers water to a pump station located below the eastern end of the existing Bay Bridge in Oakland. Water is then pumped through a 12-inch-diameter steel pipe attached to the east span of the Bay Bridge. This water supply charges the fire hydrants on the Bridge and is connected to the existing water tanks on Yerba Buena Island for an emergency supply. The maximum flow rate for this system is 1,500 gpm. There is currently an agreement between EBMUD and the Navy regarding flow rates that maintain water quality in the line on the Bridge. Actual annual average flow is about 35 gpm. The water is chloraminated by EBMUD before delivery. The new east span of the Bay Bridge includes a replacement pipeline that will be connected to the EBMUD supply when the existing bridge is taken out of service and the new span is opened.

As described above, SFPUC furnishes potable water to existing water tanks on Yerba Buena Island. There are currently four concrete reservoirs with a total design capacity of approximately
6.5 million gallons that serve as both the potable and fire protection water supplies for Treasure Island / Yerba Buena Island. The tanks range in age from 60 to 85 years. Although the design capacity is approximately 6.5 million gallons, the tanks are in varying states of disrepair and cannot operate to their full design capacity. The actual, existing operating storage
capacity is approximately 1.9 million gallons, with another 0.5 million gallons dedicated for reserve fire protection. The existing operating storage would be used during the initial phases of the Proposed Project, but would eventually be replaced with new tanks.

The tanks are connected to water users on Treasure Island and Yerba Buena Island through distribution piping. Water flows by gravity to Treasure Island and by gravity and pumping to Yerba Buena Island. The distribution piping constructed in 1939 consisted of separate systems for potable water and fire protection. In 1990, the two systems were combined and segments of the original copper, galvanized steel, and asbestos cement pipes were replaced with PVC pipe. Many of the original building services and irrigation services have not been replaced. The relatively new PVC water distribution system would be used on an interim basis during the initial phases of construction, but would eventually be replaced by full buildout of the Proposed Project.

**Regulatory Framework**

The following state and local laws, programs, and policies affect the supply and use of water in San Francisco. No federal laws apply.

**State**

*Urban Water Management Plan*

In 1983, the California Legislature enacted the Urban Water Management Planning Act (California Water Code §§10610 - 10656). The Act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Act describes the contents of the UWMP as well as how urban water suppliers should adopt and implement the plans. The plan must be updated at least every five years on or before December 31 in years ending in five and zero. In 2005, San Francisco prepared an Urban Water Management Plan as required by the California Water Code.
Water Supply Assessment

The State of California adopted Senate Bill 610 ("SB 610") effective January 1, 2002. SB 610 requires land use planning entities, such as the City and County of San Francisco, when evaluating large development and redevelopment projects,95 to request an assessment of the availability of water supplies from the water supply entity that will provide water to a project. The Water Supply Assessment ("WSA") is performed in conjunction with the land use approval process associated with a project and must include an evaluation of the sufficiency of the water supplies available to the water supplier to meet existing and future demands, including the demand for a project over a 20-year time period that includes normal, single-dry, and multiple-dry years.

When a new development project is accounted for in the demand projections of an UWMP, the WSA can refer to the UWMP and no further analysis is necessary. In an effort to streamline the water supply planning process within San Francisco, the SFPUC adopted a resolution in 2006 to allow for all development projects requiring a WSA under SB 610 to rely solely on the SFPUC’s adopted UWMP without having to prepare individual WSAs. Because the Planning Department and SFPUC are currently engaged in planning for various large land development proposals that go beyond the future developments considered in the UWMP, the SFPUC concluded that its UWMP no longer accounted for every qualifying project in San Francisco. Therefore, until the UWMP is updated in 2010, a WSA must be prepared for any qualifying project not accounted in the adopted UWMP, including the Proposed Project. The WSA must consider the SFPUC’s current and projected supplies in light of projected demands associated with new growth not covered in the UWMP.

A WSA has been prepared for the Treasure Island / Yerba Buena Island Redevelopment Project and is presented in Appendix I of this EIR.

Water Supply Verification

California Government Code Section 66473.7 requires that a condition be included in any tentative subdivision map (or development agreement) for a residential subdivision of 500 or more units mandating that a “sufficient water supply” be available to serve the subdivision in addition to existing and planned future water uses.96 The appropriate public water system must submit to the city or county a water supply verification evaluating whether such a sufficient water supply is available.

95 Under SB 610, large projects are defined as: 1) a project creating the equivalent demand of 500 residential units, 2) a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space, 3) a commercial building employing more than 1,000 persons or having more than 250,000 square feet of floor space, 4) a proposed hotel of more than 500 rooms, or 5) a mixed-use project with one or more projects of these sizes. (In addition, there are other triggers under the Act related to industrial uses.)

supply exists, based on substantial evidence. If verification of a sufficient water supply cannot be provided, a final subdivision map cannot be issued for the subdivision, and the subdivision cannot be built.

Local

Water Conservation

San Francisco’s Residential Water Conservation Ordinance generally requires a homeowner to install water conservation equipment (such as low-flow showerheads, faucets, and toilets) prior to selling a home or making a major improvement to the home.97

Water Recycling for Irrigation and Other Uses

In 1991, the SFPUC sponsored and the San Francisco Board of Supervisors passed a Reclaimed Water Use Ordinance98 generally requiring development projects over 40,000 sq. ft. to build and operate a reclaimed water system within the buildings and a reclaimed water irrigation system for the landscaping.99

San Francisco General Plan

The San Francisco General Plan Environmental Protection Element includes the following objectives and policies that are relevant to the proposed Area Plan.

Objective 5: Assure a permanent and adequate supply of fresh water to meet the present and future needs of San Francisco.

Policy 1: Maintain an adequate water distribution system within San Francisco.

Policy 2: Exercise controls of development to correspond to the capabilities of the water supply and distribution system.

Policy 3: Ensure water purity.

Policy 5: Improve and extend the Auxiliary Water Supply System of the Fire Department for more effective fire fighting.

Objective 6: Conserve and protect the fresh water resource.

Policy 1: Maintain a leak detection program to prevent the waste of fresh water.

Policy 2: Encourage and promote research on the necessity and feasibility of water reclamation.

99 Ibid, section 1204.
IMPACTS

Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to utilities. The Planning Department’s Initial Study Checklist provides a framework of topics to be considered in evaluating potential impacts under CEQA. Implementation of a project could have potentially significant impact related to water if it were to:

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- Have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements.

Approach to Analysis

Typically, EIRs compare the water demand of the project to the capacity of the existing water delivery infrastructure and water supply. In this case, water would be provided to the Proposed Project by the SFPUC from its existing Regional Water System, and no new or expanded water treatment facilities would be necessary to meet the water demand of the Proposed Project, for the reasons set below. For the Proposed Project, water demand is based on the Water Supply Assessment prepared for the Proposed Project by the SFPUC.

Proposed Water Distribution and Supply Facilities

Potable Water

The existing SFPUC pump station in San Francisco and the existing 10-inch diameter pipeline on the west span of the Bay Bridge would continue to be the primary means of supplying water to the Project Area. An emergency water supply to Treasure Island / Yerba Buena Island would be provided by a new 12-inch-diameter pipeline on the new east span of the Bay Bridge, connected to a new SFPUC pump station near the eastern base of the Bridge. The new system would be capable of delivering up to 1,800 gpm of potable water from the EBMUD connection point on Beach Street in Oakland. The water would be chloraminated by EBMUD prior to delivery, as with the existing emergency supply.
The water source from EBMUD provides an emergency water source to the Project Area. If the SFPUC system were to be taken off-line for maintenance, power interruptions, or damage due to an earthquake, EBMUD would be capable of supplying 1,800 gpm, sufficient to meet peak demands for the Proposed Development Project on an emergency basis. In the extremely unlikely event that both water supplies would be unavailable at the same time, then 2 days of maximum daily demand plus 4 hours of fire storage available in the proposed replacement water tanks is expected to be sufficient to provide necessary water supply during the time required for repairs or evacuation of the Islands. In an extreme emergency, the consumption of potable water would likely be much less than the calculated average daily demand.

Utility service to the Job Corps campus and buildings would be maintained throughout the phased buildout of the Proposed Project. Water service to the Job Corps campus would be more robust under the Proposed Project. Certain modifications for connections of the water pipes would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process for each major phase. Recycled water would be available to the Job Corps campus.

Water service to the Coast Guard Station and Sector Facility would be maintained throughout the buildout of the Proposed Project. Certain modifications to the piping for connections of the water pipes would be necessary. Details would be worked out during the design process. TIDA and the Coast Guard have agreed that they would enter into a Memorandum of Understanding (MOU). The MOU would include (among other things) a process for the Coast Guard to notify TIDA when it is considering modernization projects, so that modifications for increased utility demand can be coordinated. Among other things, the MOU would also address construction coordination to ensure uninterrupted utility delivery and service.

Based on population projections, commercial and institutional use projections, and fire protection requirements, the total volume of water storage needed for the Project Area would be 4.0 million gallons. In order to provide this amount of storage, two new storage tanks would be constructed on Yerba Buena Island:

- A 1.0-million-gallon tank at the location of the existing tank adjacent to Macalla Road, and
- The remainder of the storage would occur in a single 3.0-million-gallon tank, divided into two 1.5-million-gallon cells, either adjacent to the 1.0-million-gallon tank or on the west slope of YBI adjacent to the proposed hotel.

EBMUD currently provides 220 mgd of water to approximately 1.3 million people as well as industrial, commercial, and institutional customers in its 331-square-mile service area. EBMUD is not the water supply purveyor for the Proposed Project.
The existing 2.4 million gallons of operating storage would continue to be used during the initial phases of the Proposed Project. The storage tanks would be supplied by water pumped directly from the 10-inch supply line from San Francisco, or from the back-up supply from EBMUD during emergencies.

The Development Program would completely replace the existing PVC water distribution system in phases with ductile iron pipe that would conform to SFPUC requirements.
Firefighting Water Supply

Treasure Island and Yerba Buena Island do not currently have a supplemental firefighting water supply system for fire protection. The Proposed Project includes construction of a new firefighting water supply system on Treasure Island and a supplemental fire protection system in the event of an extended total disruption of both sources of potable water supply to the island. The supplemental system is not planned to serve Yerba Buena Island due to its steep topography, smaller development size, and proximity to the water storage tanks. The supplemental firefighting water system would have two sources of supply: recycled water and Bay water.

The recycled water portion of the system would include storage for one average day of recycled water demand of 420,000 gallons for Treasure Island, and 840,000 gallons of recycled water for the supplemental firefighting supply, for a total of 1.26 million gallons of recycled water storage. Storage would be provided on Treasure Island in the vicinity of the recycled water plant. The system would have pumping facilities capable of providing combined fire and recycled water demands. The pumping facility would have back-up power and redundant pumps for reliability. The system would include fire hydrants independent of the domestic water supply fire hydrants; these hydrants would be identified as non-potable water.

A separate Bay water supplemental system would also be provided, with two fire boat manifolds and two suction hydrants located along the southern shore of Treasure Island near the existing hangar buildings. The manifolds would allow the fireboats to connect to the supplemental Bay water supply system in an extreme emergency and charge the lines in the event the recycled water system were to fail.101 Two suction hydrants that would allow fire trucks to draw water directly from San Francisco Bay.

Construction of portions of the supplemental firefighting water supply system would require temporary shoreline excavation and backfill that could create water quality impacts in the Bay. Water quality impacts are discussed in Section IV.O, Hydrology and Water Quality.

Operation and testing of the intake facilities of the supplemental system could cause marine safety hazards and biological impacts. Operation of the intake structures has the potential to cause a vortex at the end of the intake pipeline, which could create a hazard at the water surface. To prevent this, the mouth of the intake pipe would be enlarged to reduce the flow velocity at the mouth of the pipe or otherwise designed to prevent vortex formation. Biological impacts are discussed in Section IV.M, Biological Resources.

101 When connected to the pipe manifold, the fireboat would draw salt-water via its on-board pump. This is inherent to the operation of the fireboat and happens wherever and whenever the existing fireboats currently operate.
Recycled Water

As described in Section IV.K.2, Wastewater Recycling Plant, Storage, and Distribution, under “Proposed Project Facilities,” p. IV.K.14, the Proposed Project would recycle wastewater for irrigation, and approved commercial and residential uses, including toilet flushing and other authorized plumbing fixtures. Because the recycled water would offset the demand for potable water, use of recycled water is further discussed below.

The Proposed Project would create approximately 216 acres of open space area on Treasure Island, including the urban farm and roadside planter areas, and approximately 25 acres of open space to be planted in turf grass for recreational use as part of the Sports Park. These areas would require permanent, long-term irrigation. The remainder of the open space would be planted with native and adapted drought-tolerant vegetation species that would require irrigation to become established, but would need substantially less, or no, irrigation after becoming established. The largest irrigation demand would occur during the dry season, April to October, with peak demands expected in July. In addition, the storm water treatment wetlands would also require makeup water during the dry season. Recycled water demand for irrigation would increase with the phased construction of the open space, peaking with the completion of the North Shoreline Park and The Wilds areas on the north end of Treasure Island in the last phase of construction. Demand would be reduced as the natural areas are established and removed from the irrigation system. In contrast, the recycled water demand in commercial and residential buildings would grow as such buildings are constructed and occupied, and then would be relatively constant throughout the year.

If recycled water demand during the first phases of development exceeds the recycled water supply, excess demand would be met with the potable water system. Because the potable water storage would be constructed at the beginning of the Proposed Project, there would be sufficient potable water available to supplement the recycled water supply in early phases when domestic demand has not reached build-out levels. During the period of development when the potable water supply is needed to supplement the recycled water supply, the potable water system would be temporarily connected to the recycled water system. This temporary connection would include a backflow prevention device approved by the SFPUC. The connection would be removed once the recycled supply is sufficient to meet demand.

The Proposed Project assumes that recycled water would be used in residential buildings for toilet flushing and any other authorized uses to the extent permitted by applicable State and local laws and regulations at the time of construction. It is assumed that residential buildings would provide currently-required piping to allow such applicable future use(s), and the estimates for recycled water production outlined above would generate sufficient recycled water to support recycled water uses as currently authorized. The Water Supply Assessment for the Proposed Project...
analyzed the Proposed Project without use of recycled water in order to provide a conservative estimate of water demand. Recycled water would be a new water source and would reduce demand from the City’s water system.

The use of gray water (water from sinks, showers, and similar sources, captured for local reuse) in residential buildings is not currently allowed. If changes are made in applicable State and local laws and regulations, individual residential buildings may construct the necessary capture facilities and piping systems for gray water. Any use of gray water would conform to all applicable state and local requirements. Because it is not known where or whether these water sources would be used, they are not evaluated further in this EIR.

**Recycled Water Supply**

As described in more detail in “Wastewater Recycling Plant and Distribution,” p. IV.K.14, recycled water would be provided by an on-island recycled water plant that would provide the forecasted, average, long-term, recycled water demand of approximately 0.42 mgd. The recycled water plant would be constructed adjacent to the wastewater treatment plant on Treasure Island and would include 1.26 million gallons of storage (0.42 million gallons to meet average day irrigation and non-potable building demands and 0.84 million gallons for fire flow). The recycled water plant would treat secondary wastewater effluent from the wastewater treatment plant.

- Wastewater effluent would be treated with microfiltration, reverse osmosis (to the extent required), and disinfection to meet California standards for recycled water. The recycled water treatment facility would be constructed and operated by the SFPUC; storage tank(s) or other facilities would be constructed by the project sponsors and/or the SFPUC. The recycled water treatment plant would be constructed in phases concurrent with the wastewater treatment plant.

Distribution piping for recycled water would be provided on Treasure Island in phases; recycled water would not be used on Yerba Buena Island in view of its distance from the recycled treatment plant and the pumping that would be required by the elevation change in order to supply a very limited local demand.

**Project Impacts**

**Water Infrastructure Construction**

**Impact UT-9:** Construction activities associated with water infrastructure of the Proposed Project could result in air quality, noise, water quality, transportation, hazardous materials, and biological impacts, as further evaluated under those EIR topics. *(See significance determinations in other topics.)*

All of the water infrastructure on the Islands would be new and installed as part of the Proposed Project. This construction activity would involve relatively shallow trenches.
As described previously, water for the Proposed Project would be provided by the SFPUC from its existing water treatment system and no new water treatment facilities would be required for the Proposed Project.

While the WSA finds that there would be sufficient water supply in the SFPUC regional system to serve the Proposed Project, construction of recycled water treatment facilities is included as part of the Proposed Project. As noted in the WSA, this would be an additional supply and is not needed to meet water demands from the Proposed Project.\(^\text{102}\)

Demolition, land clearing, grading, and other ground-disturbing construction activities associated with the installation of the new water infrastructure would temporarily affect local air quality during each construction phase, causing temporary and intermittent increases in particulate dust and other pollutants. Operation of construction trucks and heavy equipment would create fugitive dust and emit nitrogen oxides, carbon monoxide, sulfur dioxide, reactive organic gases or hydrocarbons, and particulate matter, as a result of diesel fuel combustion. Use of hazardous materials in new construction could result in emissions of toxic air contaminants. Construction activities and heavy equipment would also cause temporary and intermittent increases in noise during each construction phase. Excavation may result in release of volatile contaminants in the ground or groundwater, and excavated soils could contain hazardous materials. Construction activities could pollute run-off from construction areas. Construction trucks and other vehicles could cause transportation impacts on local roads and/or the Bay Bridge. Construction activities could adversely affect biological resource.

Impacts of construction of the water distribution facilities and any related mitigation measures are discussed in Section IV.E, Transportation, pp. IV.E.67 – IV.E.71 (Impact TR-1); Section IV.F, Noise, pp. IV.F.14 – IV.F.20 (Impacts NO-1 and NO-2); Section IV.G, Air Quality, pp. IV.G24-IV.G.38 (Impacts AQ-1 – AQ-4); Section IV.M, Biological Resources, pp. IV.M.41-IV.M.63 (Impacts BI-1 – BI-6); Section IV.O, Hydrology and Water Quality, pp. IV.O.35 – IV.O.41 (Impacts HY-1 – HY-7); and Section IV.P, Hazards and Hazardous Materials, pp. IV.P.39 – IV.P.51 (Impacts HZ-1 – HZ-9).

**Water Supply**

**Impact UT-10:** There would be sufficient water supply available to serve the Proposed Project from existing entitlements and resources, and no new or expanded water supply resources or entitlements would be needed. (No Impact)

**Project Water Demand**

The WSA estimates that the water demand of the Proposed Project at full buildout in 2030 would be about 1.63 mgd. Table IV.K.3: Estimated Water Demand for Treasure Island and Yerba

\(^{102}\) WSA, pp. 1-6 and 4-5.
Buena Island (2030) presents the Proposed Project water demand at buildout, plus continuing demand associated with the other two users on the Islands, the Department of Labor and U.S. Coast Guard. The data in Table IV.K.3 assume compliance with the plumbing requirements of the California Building Code and with San Francisco’s Green Building Ordinance.\textsuperscript{103}

\ \textbf{Table IV.K.3: Estimated Water Demand for Treasure Island and Yerba Buena Island (2030)}

<table>
<thead>
<tr>
<th>Land Use and Facilities</th>
<th>Estimated Water Demand (gpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>962,000</td>
</tr>
<tr>
<td>Small Community Facilities</td>
<td>1,418</td>
</tr>
<tr>
<td>Pier 1 Community Center</td>
<td>3,675</td>
</tr>
<tr>
<td>Open Space</td>
<td>210,000</td>
</tr>
<tr>
<td><strong>Subtotal Residential</strong></td>
<td><strong>1,177,093</strong></td>
</tr>
<tr>
<td>Hotel</td>
<td>136,000</td>
</tr>
<tr>
<td>Office</td>
<td>10,500</td>
</tr>
<tr>
<td>Retail</td>
<td>14,700</td>
</tr>
<tr>
<td>Adaptive Reuse, General</td>
<td>25,620</td>
</tr>
<tr>
<td>Adaptive Reuse, Retail</td>
<td>7,035</td>
</tr>
<tr>
<td>Miscellaneous Structures</td>
<td>7,500</td>
</tr>
<tr>
<td>Marina</td>
<td>20,000</td>
</tr>
<tr>
<td>Treasure Island School</td>
<td>21,000</td>
</tr>
<tr>
<td>Police/Fire</td>
<td>6,000</td>
</tr>
<tr>
<td>Treasure Island Sailing Center</td>
<td>1,575</td>
</tr>
<tr>
<td>Museum</td>
<td>7,875</td>
</tr>
<tr>
<td>Department of Labor</td>
<td>111,542</td>
</tr>
<tr>
<td>Coast Guard Facility</td>
<td>17,000</td>
</tr>
<tr>
<td>Utility Facilities</td>
<td>1,470</td>
</tr>
<tr>
<td>Urban Farm</td>
<td>62,000</td>
</tr>
<tr>
<td><strong>Subtotal Non-Residential</strong></td>
<td><strong>449,817</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,626,910</strong></td>
</tr>
</tbody>
</table>


\textit{Water Supply / Water Demand}

To assess the adequacy of current and projected future water supplies to meet estimated future demand, including the demand associated with the three major development proposals including implementation of the Proposed Project and other projected future growth (e.g., background growth from Association of Bay Area Government’s projections), the WSA included a comparison of retail water supply and demand. Table IV.K.4: Comparison of Projected Water Supply and Demand for Normal, Single Dry, and Multiple Dry Years, provides a comparison of the projected future retail water supply and demand in varying drought conditions over the WSA’s 20-year planning horizon through 2030.

\textsuperscript{103} The Proposed Project would either comply with the San Francisco Green Building Ordinance or with a set of equivalent or superior requirements adopted by TIDA as part of the Proposed Project’s Green Building specifications.
The deficit shown in 2010 is the result of the Phased Water System Improvement Program, which restricts the SFPUC’s allocation from the Regional Water System supply to 81 mgd. Full development of the additional 10 mgd of new local supplies from groundwater, recycled water, and conservation programs, is projected to be available by 2015. However, current retail demand is much lower than the estimated 2010 demand in Table IV.K.2, p. IV.K.45 (actual Fiscal Year 2007-2008 demand was 83.9 mgd). If retail demand exceeds the available Regional Water System supply of 81 mgd between 2010 and 2015, and total Regional Water System deliveries exceed 265 mgd between 2010 and 2015, the Water Supply Agreement that is part of the Phased Water System Improvement Program (see “Water Supply Reliability Planning,” above on p. IV.K.41) allows the SFPUC to purchase additional water from the Regional Water System for retail customers in the SFPUC service area by paying an environmental surcharge. It is expected, therefore, that the Proposed Project would not contribute to any deficiencies in supply experienced by the SFPUC between 2010 and 2015. After 2015, when the additional 10-mgd local supply is projected to be completed, the WSA shows no expected deficit in supply during normal years.

As shown in Table IV.K.4, by 2030, during the second and third year of a multiple dry-year period, the projected water supply would be slightly less than the estimated total retail demand, including demand associated with the Proposed Project. Thus, during multiple dry-year periods, the SFPUC would need to implement the provisions of the Water Shortage Allocation Plan and the Retail Water Shortage Allocation Plan, which could include voluntary rationing or the curtailment of retail deliveries. With the implementation of the Water Shortage Allocation Plan and the Retail Water Shortage Allocation Plan during multiple dry-year periods, existing and projected future water supplies would be sufficient to meet estimated future water demand.

The deficit shown in 2010 in Table IV.K.4 is the result of reducing the regional water system supply to 81 mgd as per the Phased WSIP Variant, without full development of the additional 10 mgd of new supplies. 10 mgd of new sources would be developed and available for use in San Francisco by 2015. However, San Francisco retail demand is currently lower than projected. (Fiscal Year 2007-2008 use was 83.9 mgd.) If San Francisco retail demands exceed the available supply of 84.5 mgd between 2010 and 2015, the Water Supply Agreement allows the SFPUC to purchase additional water from the regional water system. If combined retail and wholesale deliveries exceed 265 mgd, the SFPUC retail customers would be required to pay an Environmental Surcharge for deliveries over 81 mgd. (Total regional water system deliveries in FY07/08 were 256.7 mgd.)

---

104 Total Regional Water System deliveries in FY07/08 were 256.7 mgd, which is 8.3 mgd below the 165 mgd watershed delivery goal.
105 WSA, p. 5-1.
Table IV.K.4: Comparison of Projected Water Supply and Demand for Normal, Single Dry, and Multiple Dry Years (mgd)

<table>
<thead>
<tr>
<th></th>
<th>Normal Year</th>
<th>Single Dry Year</th>
<th>Multiple Dry Year Event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2010</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RWS Supply</td>
<td>RWS Supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td>81.00</td>
<td>81.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Groundwater</td>
<td>3.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Retail Supply</td>
<td>84.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Retail Demand</td>
<td>91.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Surplus/(Deficit)</td>
<td>(7.31)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RWS Supply</td>
<td>81.00</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Groundwater</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Total Retail Supply</td>
<td>84.50</td>
<td>84.50</td>
<td>84.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>91.81</td>
<td>91.81</td>
<td>91.81</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>(7.31)</td>
<td>(7.31)</td>
<td>(8.81)</td>
</tr>
<tr>
<td></td>
<td>RWS Supply</td>
<td>81.00</td>
<td>81.00</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Groundwater</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Total Retail Supply</td>
<td>84.50</td>
<td>84.50</td>
<td>84.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>91.81</td>
<td>91.81</td>
<td>91.81</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>(7.31)</td>
<td>(7.31)</td>
<td>(8.81)</td>
</tr>
<tr>
<td></td>
<td>WSIP Supply Sources</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Total City Supply</td>
<td>94.50</td>
<td>94.50</td>
<td>94.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>91.87</td>
<td>91.87</td>
<td>91.87</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>2.81</td>
<td>2.81</td>
<td>1.31</td>
</tr>
<tr>
<td></td>
<td>WSIP Supply Sources</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Total City Supply</td>
<td>94.50</td>
<td>94.50</td>
<td>94.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>91.87</td>
<td>91.87</td>
<td>91.87</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>2.63</td>
<td>2.63</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>WSIP Supply Sources</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Total City Supply</td>
<td>94.50</td>
<td>94.50</td>
<td>94.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>92.36</td>
<td>92.36</td>
<td>92.36</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>2.14</td>
<td>2.14</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>WSIP Supply Sources</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Total City Supply</td>
<td>94.50</td>
<td>94.50</td>
<td>94.50</td>
</tr>
<tr>
<td>Total Retail Demand</td>
<td>93.42</td>
<td>93.42</td>
<td>93.42</td>
</tr>
<tr>
<td>Surplus/(Deficit)</td>
<td>1.08</td>
<td>1.08</td>
<td>(0.42)</td>
</tr>
</tbody>
</table>

Notes:
- mgd – million gallons per day
- RWS – Regional Water System
- WSIP – Water System Improvement Plan
- a The deficit shown in 2010 is the result of reducing the RWS supply to 81 mgd as per the Phased WSIP Variant, without full development of the additional 10 mgd of new supplies. 10 mgd of new sources would be developed and available for use in SF by 2015. However, SF retail demand is currently lower than projected (FY07/08 use was 83.9 mgd). If SF retail demands exceed the available supply of 84.5 mgd between 2010 and 2015, the Water Supply Agreement allows the SFPUC to purchase additional water from the RWS. If combined retail and wholesale deliveries exceed 265 mgd, the SFPUC retail customers would be required to pay an Environmental Surcharge for deliveries over 81 mgd (Total RWS deliveries in FY07/08 were 256.7 mgd).
- b Deficit occurs in year 2 and 3 of multiple dry year event, SFPUC implements its Drought Year Water Shortage Contingency Plans - RWSAP and WSAP would be required to balance supply and demand under this projected shortfall.

The Proposed Project’s total water demand of 1.63 mgd would account for approximately 1.7 percent of the total Regional Water System retail demand in 2030. The Proposed Project’s demand would not affect the ability of the SFPUC to serve its retail customers.106

The WSA did not assume that recycled water would be available; therefore, recycled water is considered an additional water supply source beyond the SFPUC’s Water System Improvement Program recycled water supplies. Thus, the WSA provided a conservative water supply analysis, and projected potable water use for the Project Area and the Coast Guard at 1.63 mgd. (See Table IV.K.3: Estimated Water Demand for Treasure Island and Yerba Buena Island (2030), p. IV.K.56.) However, recycling water is part of the Proposed Project. The wastewater treatment plant to be constructed by the SFPUC as part of the Proposed Project would include facilities to recycle wastewater. The Project Area is designated as a recycled water use area as defined in San Francisco’s Recycled Water Ordinances. The ordinances require property owners to install dual plumbing systems for recycled water use for certain uses within the designated use areas. In compliance with the City’s Recycled Water Ordinances and to support the goals of the Sustainability Plan for the Project Area, the Sustainability Plan includes a program to use recycled water on Treasure Island. As described above in Section IV.K.2., Wastewater Recycling Plant, Storage, and Distribution, under “Proposed Project Facilities,” p. IV.K.17, recycled water would be used for irrigation of the open space areas, the urban farm, roadside planter areas, landscape water features, and toilet flushing in buildings. These measures would reduce the overall potable water demand of the Proposed Project. This would reduce the amount of potable water required by about 0.30 mgd.

As the WSA concludes, implementation of the Proposed Project would not require an expansion of the SFPUC’s water supply facilities or infrastructure to increase delivery capacity, nor would it adversely affect the City’s water supply. The population growth accommodated by the Proposed Project would be within the projections used as the basis for demand estimates in the Water Supply Availability Study. In addition, the SFPUC has adopted a long-term water management plan and is undertaking a number of efforts to meet projected system-wide demand and ensure the reliability of the system’s water supply. As described above, the SFPUC has sufficient water supply and delivery capacity to provide service to the Project Area. For that reason, implementation of the Proposed Project would have a less-than-significant impact on water supply.

106 WSA, p. 6-1.
Cumulative Impacts

Impact UT-11: Implementation of the Proposed Project would not result in a cumulatively considerable impact on existing entitlements and resources, and no new or expanded water supply resources or entitlements would be needed. *(No Impact)*

The *Water Supply Assessment* analyzes the Proposed Project’s water demand in the context of overall future water demand from all of the SFPUC’s customers. Therefore, it provides an assessment of future cumulative impacts on water supplies. Based on the discussion above summarizing the conclusions of the WSA that sufficient water would be available to serve all SFPUC demand, there would not be a significant cumulative impact on water supply. Therefore, the Proposed Project’s contribution to long-term water demand would not result in a significant cumulative impact.

K.5 SOLID WASTE DISPOSAL

SETTING

Recology provides solid waste collection, recycling, and disposal services for residential and commercial garbage and recycling at Treasure Island / Yerba Buena Island. San Francisco uses a three-cart collection program: residents and businesses sort solid waste into recyclables, compostable items, such as food scraps and yard trimmings, and garbage.

All materials are taken to the San Francisco Solid Waste Transfer and Recycling Center, located on Tunnel Avenue in the southeast corner of San Francisco. There, the three waste streams are sorted and bundled for transport to the composting and recycling facilities and the landfill.

San Francisco has created the first large-scale urban program for collection of compostable materials in the country. Residents and restaurants and other businesses send food scraps and other compostable material to Recology’s Jepson-Prairie composting facility, located in Solano County. Food scraps, plant trimmings, soiled paper, and other compostables are turned into a nutrient-rich soil amendment, or compost.

Recyclable materials are sent to Recycle Central, located at Pier 96 on San Francisco’s Southern waterfront, where they are separated into commodities and sold to manufacturers that turn the materials into new products.

Garbage is taken to the Altamont Landfill located east of Livermore in Alameda County. The Altamont Landfill is a regional landfill that handles residential and construction waste. The Altamont Landfill has a permitted maximum disposal of 11,500 tons per day and received about
1.29 million tons of waste in 2007 (the most recent year reported by the State). In 2007, the waste contributed by San Francisco (approximately 628,914 tons) represented approximately 49 percent of the total volume of waste received at this facility. The remaining permitted capacity of the landfill is about 45.7 million cubic yards. With this capacity, the landfill can operate until 2032; however, the landfill’s permit to operate will expire in 2029.

In 1988, the City of San Francisco contracted for the disposal of 15 million tons of solid waste at Altamont. Through August 1, 2009, the City has used approximately 12.5 million tons of this contract capacity. The City projects that the remaining contract capacity will be reached no sooner than August 2014.

On September 10, 2009, the City and County of San Francisco announced that it intends to award its landfill disposal contract to SF Recycling & Disposal Inc., a subsidiary of Recology. SF Recycling & Disposal says it would ship solid waste from San Francisco by rail to its Recology Ostrom Road landfill in Yuba County. The landfill is open to commercial waste haulers and can accept up to 3,000 tons of municipal solid waste per day. The site has an expected closure date of 2066 with a total design capacity of over 41 million cubic yards. The Board of Supervisors is expected to ratify a new agreement by the end of 2010. The agreement will be for 5 million tons of capacity, which could represent 20 or more years of use.

Hazardous waste, including household hazardous waste, is handled separately from other solid waste. Recology operates a facility at the San Francisco Dump for people to safely dispose of the hazardous waste generated from their homes. The most common wastes received are leftover paint, motor oil from cars, thinners, spray cans, and old garden products, such as pesticides and fertilizers. Commercial hazardous material collection and disposal is discussed in Section IV.P, Hazards and Hazardous Materials, p. IV.P.52.
Under the California Integrated Waste Management Act of 1989, San Francisco was required to adopt an integrated waste management plan, implement a program to reduce the amount of waste disposed, and have its waste diversion performance periodically reviewed by the California Integrated Waste Management Board. The City was required to reduce the amount of waste sent to landfill by 50 percent by 2000. The City met the 50 percent reduction goal in 2000 by recycling, composting, reuse, and other efforts, and achieved 70 percent reduction in 2006.

In 2007, the State altered its evaluation criteria for assessing a jurisdiction’s programmatic effectiveness in reducing solid waste with the passage of the Solid Waste Disposal Measurement Act in Senate Bill 1016 (“SB 1016”). As a result, the complex and lengthy (generally 18 to 24 months) diversion rate measurement system has been replaced by a more simplified system that sets a 50 percent Equivalent Per Capita Disposal Target (resident or employee) for the State and each jurisdiction. This target rate is updated using the Department of Finance’s yearly population estimates and employment data from the Employment Development Department. In 2008, the target disposal rate for San Francisco residents and employees was 6.6 pounds/resident/day and 10.6 pounds/employee/day. Both of these targeted disposal rates were met, for 2008, with San Francisco residents generating about 3.7 pounds/resident/day and employed persons in San Francisco generating about 5.5 pounds/per employee/per day.

**Regulatory Framework**

**California Integrated Waste Management Act – Assembly Bill 939**

The 1989 California Integrated Waste Management Act (“CIWMA”) mandated that source reduction be the highest priority waste management strategy, followed by recycling and composting and environmentally safe transformation and land disposal. The law required that each county prepare an Integrated Waste Management Plan. The Act also required that each city prepare a source reduction and recycling element, with a plan for reducing solid waste by 25 percent by 1995 and 50 percent by 2000 using a 1989 baseline. Later revisions required that local jurisdictions and state agencies also achieve 50 percent reduction in solid waste by 2000.

**Solid Waste Disposal Measurement Act – Senate Bill 1016**

SB 1016 maintains the 50 percent diversion requirement set forth under the CIWMA, but changes the measurement system to a disposal based system – expressed as the 50 percent Equivalent Per Capita Disposal Target. This per capita disposal target is the amount of disposal a jurisdiction would have had during the base period if it had been exactly at a 50 percent diversion rate. The 50 percent Equivalent Per Capita Disposal Target is calculated by dividing the average of 2003-2006 per capita generation in half. Each jurisdiction has a specific 50 percent Equivalent Per Capita Disposal Target that cannot be compared to other jurisdictions. This disposal target is an indicator or baseline that is used to compare against the annual per capita disposal rate. This
change shifts the focus away from numeric estimates, which are just one indicator to consider, and toward diversion program implementation efforts that are better and more meaningful long-term indicators. The shift in focus from estimated diversion to measured disposal allows jurisdictions to track their programmatic progress more effectively because of the turnaround time for State review of disposal rate summaries – within 6 to 9 months rather than the 18 to 24 months under the former system. In addition, for jurisdictions that already meet the 50 percent diversion rate, such as San Francisco, annual waste generation studies are no longer required, allowing more resources to be focused on the development or maintenance of waste reduction strategies.

City of San Francisco

The City of San Francisco has enacted several programs to divert solid waste from the landfill. The Construction and Demolition Debris Recovery Ordinance, adopted in 2006, requires preparation of a waste diversion plan and diversion of 65 percent or more of the construction and demolition debris from disposal in a landfill. The City’s Green Building Ordinance, which became effective January 1, 2009, requires that at least 75 percent of a project’s construction debris be diverted from the landfill. In June 2009, the Board of Supervisors passed the Mandatory Recycling & Composting Ordinance, which requires all of San Francisco to separate recyclables, compostables, and landfilled trash. The City’s Plastic Bag Reduction Ordinance requires the use of compostable plastic, recyclable paper and/or reusable checkout bags by supermarkets and drugstores. The Food Service Waste Reduction Ordinance requires restaurants and food vendors to use food ware that is made of compostable or recyclable material rather than styrofoam. The Resource Conservation Ordinance requires City departments to reduce waste, maximize recycling, and buy products with recycled content. The Mayor’s Executive Order on Bottled Water prohibits City departments from using public funds to purchase bottled water. In 2002, the Board of Supervisors set goals of achieving 75 percent diversion by 2010 and zero solid waste by 2020.

The Community Facilities Element of the San Francisco General Plan contains the following policy relating to solid waste:

Objective 11: Locate solid waste facilities in a manner that will enhance the effective and efficient treatment of solid waste.

Policy 11.1: Provide facilities for treatment of solid waste and locate such facilities as shown on the Wastewater and Solid Waste Facilities Plan.

---

113 The Proposed Project would adopt Green Building Specifications that meet or exceed these requirements.
IMPACTS

Significance Criteria

The City and County of San Francisco has not formally adopted significance thresholds for impacts related to solid waste. The Planning Department Initial Study Checklist form provides a framework of topics to be considered in evaluating potential impacts under CEQA. Implementation of a project could have a potentially significant impact related to solid waste if it were to:

- Be served by a landfill with insufficient permitted capacity to accommodate the project’s solid waste disposal needs; or
- Fail to comply with Federal, State, and local statutes and regulations related to solid waste.

Approach to Analysis

The Proposed Project would generate solid waste during construction and during operation as proposed new buildings are occupied with residents and business employees, and as recreation facilities are used by residents and visitors. The analysis calculates the estimated amount of solid waste expected to be generated and compares these amounts to estimates of existing solid waste volumes and to landfill capacities. City requirements for recycling, composting, and reuse of solid waste materials are discussed in relation to the Proposed Project’s solid waste generation.

The project sponsors are also considering an automated, mechanical system to collect solid waste from new buildings on Treasure Island. See Section VI.E., Automated Waste Collection System Variant for analysis of this variant.

Project Impacts

Impact UT-12: The Proposed Project would be served by a landfill with sufficient capacity to accommodate the Proposed Project’s solid waste disposal needs. (Less than significant)

Construction Impacts

Construction in the Development Plan Area would generate solid waste by the demolition and deconstruction\(^{117}\) of existing structures and infrastructure. Construction and buildout of the

---

\(^{116}\) The Wastewater and Solid Waste Facilities Plan noted here in Policy 11.1 is a map that covers only mainland San Francisco. It does not include Treasure Island and Yerba Buena Island; therefore, the map provides no direction related to the Development Plan Area.

\(^{117}\) Deconstruction means removing the building in such a way that reusable and recyclable materials are conserved.
proposed Development Program would be phased and would be anticipated to occur over an approximate 10- to 20-year period.

The buildings to be demolished or deconstructed are primarily of wood and concrete construction and were formerly used for housing, administration, storage, classrooms, shops, dormitories, and a variety of other purposes. To the extent practical, existing structures would be deconstructed, allowing for maximum reuse of materials. The feasibility of reuse or recycling of materials may be limited by requirements for abatement of hazardous materials such as lead-based paint and asbestos, and by the potential value of the recycled material. In addition to the demolition and deconstruction of structures, all existing pavements, underground utilities, and overhead utilities would be removed. Where possible, concrete and asphalt pavements would be recycled or used on site or made available for use elsewhere; a concrete/asphalt crushing plant would be operated on Treasure Island to assist in recycling/reuse of these materials. The crushing plant would be a long-term temporary facility, located for efficiency during the various demolition and construction phases. Impacts related to the crushing plant are discussed in Section IV.G, Air Quality, pp. IV.G.27 (Impact AQ-2) and Section IV.F, Noise, pp. IV.F.14 – IV.F.17 (Impact NO-1). Metals in utilities would be recycled as feasible.

Trees and other vegetation would be protected in place, relocated, or removed as needed from areas to be graded. All trees and plants to be removed would be recycled by composting for on-site use during future planting and erosion control activities.

The City’s Construction and Demolition Debris Recovery Ordinance, adopted in 2006, would require preparation of a waste diversion plan and the Green Building Ordinance, which became effective January 1, 2009, would require that at least 75 percent of the project’s construction debris is diverted from the landfill.\(^{118}\) To comply with these requirements, and assist in achieving the sustainability goals for the project, the Development Program would include a Master Deconstruction and Demolition Plan. Deconstruction would allow reuse or recycling of the wood, concrete, metals and other materials.

The construction of new residential, commercial, and institutional space and infrastructure would incorporate recycled materials where feasible. Sustainability goals of the Proposed Project include obtaining 20 percent of the building materials locally, and obtaining 10 percent of the building materials using recycled content. These goals would apply to both structures and pavement materials.

\(^{118}\) The Proposed Project would comply with these requirements either through compliance with the two ordinances themselves, or by incorporating equivalent or superior requirements into the Proposed Project’s Green Building Specifications, which would be adopted by TIDA.
Operational Impacts

According to CalRecycle, formerly the California Integrated Waste Management Board, San Francisco residents generate approximately 3.7 pounds of solid waste per resident per day, while commercial uses generate approximately 5.5 pounds per employee per day. In 2008, the City produced a total of approximately 594,732 tons of solid waste. At the current population and employment level, Treasure Island / Yerba Buena Island generates approximately 1,550 tons of solid waste per year. At project buildout, the Project Area would generate approximately 15,520 tons of solid waste per year. This would be slightly less than approximately 2.5 percent of the total quantity of solid waste generated in 2008 by the City as a whole.

The City has implemented a number of aggressive strategies to divert additional solid waste and achieve Citywide diversion goals. The City plans to achieve a 75 percent landfill diversion by 2010 and full (100 percent) waste diversion by 2020. The City encourages residents and businesses to pre-sort recyclables, compostable wastes (food scraps and yard waste), and garbage into separate curbside collection containers; sponsors regular public outreach events to educate San Francisco residents and businesses about waste diversion techniques; and conducts special collection events for wastes that are not generally recyclable at curbside (e.g. batteries, electronics, hazardous wastes). For municipal operations, City departments participate in a sustainable purchasing program that encourages the purchase of recyclable materials. The City also sponsors grants for waste diversion research and works with businesses to create market opportunities for materials reuse and recapture. Local waste management providers have upgraded sorting and transfer facilities to maximize the volume of material diverted. On June 9, 2009, the Board of Supervisors approved an ordinance that requires recycling and composting by residential and commercial uses. All residents and businesses of the Development Plan Area would be required to comply with the City’s mandatory recycling and composting ordinance. The project sponsors would also provide recycling facilities for residents and tenants of commercial and retail space, including recycling containers in common areas.

The City’s contribution to landfills is anticipated to diminish over time as the City implements more aggressive waste-diversion strategies. Increasing solid waste diversions would extend the life of the landfill used by the City, lengthening the time horizon before the remaining disposal capacity is filled.

120 Ibid.
121 Based on existing (2010) population of 1,820, and employment of 320 persons.
122 Based on 2030 population of 18,640, and employment of 2,920.
The increased residential population and commercial activity resulting from the Proposed Project would incrementally increase total waste generation from the City. The increasing Citywide rate of diversion through recycling, composting, and other methods would result in a decreasing amount of the City’s total waste that requires deposition in the landfill. The City’s contract with the Altamont Landfill expires in 2014. After that date, the City will begin using the Ostrom Road landfill in Yuba County. This landfill has a closure date of 2066 with a total design capacity of over 41 million cubic yards. The City will have a contract for 5 million tons of capacity, which could represent 20 or more years of use beginning in 2014. This would be sufficient to accommodate the solid waste generated from the Development Plan Area until at least 2030 (Proposed Project buildout), if not longer.

Given the City’s record of reducing its municipal waste sent to the landfill, and given the near-term capacity available at the Altamont Landfill and the long-term capacity available at the Ostrom Road Landfill, the solid waste from the construction and operation of the Proposed Project would not result in the landfill exceeding its permitted capacity, and would result in a less-than-significant impact, and no mitigation is required.

**Impact UT-13: The project would not fail to comply with Federal, State, and local statutes and regulations related to solid waste. (Less than Significant)**

Under the California Integrated Waste Management Act of 1989, San Francisco was required to adopt an integrated waste management plan, and implement a program to reduce the amount of waste sent to the landfill. The City was also required to reduce the amount of waste sent to landfill by 50 percent by 2000. The City met the 50 percent reduction goal in 2000 by recycling, composting, reuse, and other efforts. The City has continued to reduce its waste stream and achieved a reduction of 70 percent in 2006.

All residents and businesses in the Development Plan Area would be required to comply with the City’s mandatory recycling and composting ordinance. The project sponsors would also provide recycling facilities for residents and tenants of commercial and retail space, including placing recycling containers in common areas.

Regarding construction, as discussed above under Impact UT-11, the project sponsors would either comply with the City’s Construction and Demolition Debris Recovery Ordinance and Green Building Ordinance or with equivalent or superior provisions in the Proposed Project’s Green Building specifications. To comply, and to assist in achieving the sustainability goals for the Proposed Project, the Development Program would include the Master Deconstruction and Demolition Plan, discussed above.
Therefore, the Proposed Project would comply with local solid waste ordinances, would comply with and exceed State standards for reducing solid waste, and would comply with Federal solid waste requirements. No mitigation measures are required.

Cumulative Impacts

Impact UT-14: Construction and operation of the Proposed Project would not result in a cumulatively considerable contribution to regional impacts on landfill capacity. (Less than Significant)

The City and County of San Francisco currently exceeds statewide goals for reducing solid waste, and is expected to further reduce solid waste volumes in the future. The operation of the Proposed Project would not contribute considerably to significant regional impacts on landfill capacity, because it would comply with City and County of San Francisco requirements to reduce solid waste as would other development projects that would also contribute waste to the City’s landfills. The other construction projects proposed for Yerba Buena Island and other large, proposed development projects in the City would generate construction waste during their construction periods. However, the Proposed Project’s program of construction waste diversion would reduce its contribution to overall solid waste volumes such that the contribution would not be considerable, and the project would not have significant cumulative impacts.

K.6 ELECTRICITY, NATURAL GAS, AND TELECOMMUNICATIONS INFRASTRUCTURE

SETTING

Existing Electrical Demand and Supply

The estimated, existing, peak electrical-capacity demand for Treasure Island and Yerba Buena Island is approximately 3.1 megawatts (“MW”). This figure includes the existing residential and commercial uses, wastewater treatment plant, Job Corps, and Coast Guard.

During the period when Naval Station Treasure Island was an operating base, the Navy was responsible for procuring and transmitting power to NSTI. Since the base was operationally closed in 1997, the SFPUC has provided electricity to Treasure Island and Yerba Buena Island. The SFPUC currently acts as a contractor to TIDA, who, as the master lessee of the property from the Navy, has rights to the Navy-owned power facilities.

123 Infrastructure Update, Chapter 11, Addendum, Aug. 18, 2009 (“Infrastructure Update, Chapter 11, 8/18/2009 Addendum”), Section 11.1.1. This value is based on recorded meter data for the period November 2004 to October 2005.
The SFPUC generates power at the Hetch Hetchy Water and Power project in and near Yosemite National Park, at other locations in the Sierra Nevada Mountains, and the SFPUC also purchases power. The SFPUC formed an internal group called the Power Enterprise in 2005, dividing its Hetch Hetchy Water and Power staff into two distinct enterprises. The Power Enterprise focuses on providing adequate and reliable supplies of electric power to meet the municipal requirements of the City and County of San Francisco.124 The Redevelopment Project group within the Power Enterprise manages short-term utility services and long-term development of infrastructure improvements at Treasure Island and Yerba Buena Island.125

The City has three hydroelectric projects, capable of producing 401 MW of electricity during the spring run-off period, when the associated water reservoirs are full.126 During an average year, the hydroelectric plants are capable of producing 1.7 million megawatt-hours (“MWh”).127 The City also owns approximately 150 miles of high voltage transmission lines that link the hydroelectric facilities with the California grid, including linking at Newark, California, in the East Bay. From the Newark substation, Pacific Gas & Electric Co. (“PG&E”) wheels power to San Francisco over its transmission lines.

The SFPUC also purchases power from PG&E and other generators, including the Western Area Power Authority (“WAPA”). The SFPUC relies on a combination of PG&E, Port of Oakland, and Navy-owned facilities to transmit power to Treasure Island via Oakland.

**Existing Electrical System**

**Distribution to Treasure Island**

Electricity to the Islands starts at PG&E’s 115 kilovolt (“kV”) substation (“Station C”) located at Grove Street and Second Street in Oakland. A 115 kV overhead transmission line, owned by the Port of Oakland and Navy, and operated and maintained by PG&E, carries power about 2.1 miles to the Davis Substation located at Seventh Street and Maritime Street in Oakland. The Davis substation is on Port of Oakland property and is owned and operated by the Port. Under an Interconnection Agreement with the SFPUC, approximately one-third of the Davis Substation’s 40 Megavolt-ampere (“MVA”) capacity is dedicated to the Navy and Treasure Island.128 Figure II.18: Proposed Dry Utilities System, in Chapter II, Project Description, p. II.68, shows the Davis Substation.

128 *Infrastructure Update*, Chapter 11, 8/18/2009 Addendum, Section 11.1.3.
Electricity from the Davis Substation toward Treasure Island is conveyed through a Navy-owned 12 kV overhead line that runs 2.7 miles to a point near the eastern end (“Lands End”) of the Bay Bridge in Oakland. The line connects to existing 12 kV submarine cables that travel under the Bay to Treasure Island. Figure II.18 show the cables from “Lands End” in Oakland to the southeastern corner of Treasure Island.

Prior to construction of the new east span of the Bay Bridge, there was one submarine cable. As part of construction of the East Span, Caltrans installed two new replacement submarine cables. The two new cables have been tested, and one is currently in operation. The second cable will be put into operation after payment to Caltrans from SFPUC is completed in 2012. The old cable may still be functional, but has not been tested since the bridge piers were built.

As shown on Figure II.18, power is carried along the southeastern edge of Treasure Island to an electric switchgear within Building 3. Electricity to Treasure Island is distributed through a network of 12-kV underground and overhead lines. Electricity to Yerba Buena Island is conveyed from Building 3 through a submarine cable that runs from Treasure Island to Yerba Buena Island under Clipper Cove.

Distribution on the Islands

The SFPUC maintains and operates the existing electrical distribution system. The submarine cables terminate on Treasure Island near the end of 3rd Street. Distribution begins at a switching station within Building 3. Treasure Island is divided into sections served by a mix of underground cables and overhead lines. The rated capacities of the distribution lines are unknown.

The submarine cable from Treasure Island to Yerba Buena Island terminates at the Yerba Buena Island Main Substation. From here, power is distributed to Yerba Buena Island via a combination of poles and underground facilities. The Coast Guard Station and Sector Facility obtains its electrical power from a tie-in to the power delivered to Yerba Buena Island by this submarine cable.

On-Site Generation – Emergency Back-up Power

There are two, trailer-mounted, diesel-powered generators (2 MW capacity each) on Treasure Island for emergency back-up power. These are located near Building 3 and connect to the main 12 kV switchgear. In the event of a power outage due to an off-island event, the generators can be manually started. They are tested weekly. Each unit has a double-walled, diesel, storage tank.

---

129 Ibid.
130 Infrastructure Update, Chapter 11, 8/18/2009 Addendum, Section 11.1.5.
tank. Each tank holds about 2,100 gallons of diesel fuel. This is adequate to run each generator at 70 percent load for about 20 hours.\textsuperscript{131}

**Existing Natural Gas Demand**

The existing, natural gas demand at Treasure Island/Yerba Buena Island is roughly 1.5 million therms\textsuperscript{132} per year.\textsuperscript{133} This includes Job Corps and the Coast Guard.

**Existing Natural Gas System**

- Natural gas on the Islands is provided by the SFPUC through a contract with the State of California Department of General Services (DGS). The contract with DGS provides for the transmission of natural gas through PG&E transmission lines in the East Bay to a submarine pipeline from Oakland to Treasure Island. A 10-inch diameter gas pipeline conveys natural gas to the southeast corner of Treasure Island. During construction of the east span of the Bay Bridge, Caltrans and PG&E replaced a portion of the pipeline, due to conflicts with bridge construction.

  The pipeline termination on Treasure Island includes a large meter. Gas distribution lines radiate out from this meter to serve Treasure Island and Yerba Buena Island via the causeway at a pressure of 10 psi. There are no submeters for individual buildings or users of natural gas beyond the terminal point of the PG&E facilities on Treasure Island. The Navy currently owns these lines, but the SFPUC maintains them. Several kinds of pipe, including polyvinyl chloride and steel are used.

  There is no existing natural gas back-up supply.\textsuperscript{134}

**Existing Telecommunications Infrastructure**

AT&T provides land-based telephone service, and a variety of other telecommunications companies provide cellular service to the Islands.\textsuperscript{135} Comcast provides cable television service,
and satellite companies may also provide television service. These services are provided via conduits on the west span of the Bay Bridge, and then distributed onto the Islands. The Coast Guard Station and Sector Facility obtains its wired (land-based) telecommunications services from the same connections to the mainland.

**Regulatory Framework**

Federal and State laws and local policies that govern electric and natural gas supply and demand are explained in Section IV.Q, Mineral and Energy Resources, under “Regulatory Framework” in

Federal

Federal pipeline safety regulations apply to natural gas pipelines. The California Public Utilities Commission (“CPUC”) has augmented these regulations, as discussed below.

State

The CPUC regulates investor-owned utilities operating in California, including Pacific Gas & Electric Company and AT&T. The CPUC issues General Orders governing many aspects of facility and equipment construction by utilities, and a major focus of these General Orders is ensuring public safety. General Order 128 provides rules for construction of underground electric supply and communications systems, such as in the proposed joint utility trench (see below). General Order 112-E provides rules for construction of natural gas piping systems. General Order 95 contains rules for overhead electric line construction.

Local

Regarding the Proposed Project and building code enforcement, while the Navy still owns Treasure Island, the San Francisco Department of Building Inspection (“DBI”) advises TIDA regarding building code compliance. Subsequent to the land transfer DBI would perform compliance reviews with respect to various building codes, such as the San Francisco Building Code (which includes the California Building Code) and San Francisco Electrical Code, just as DBI does throughout the City.

136 49 Code of Federal Regulations, parts 190, 191, 192, 193, and 199.
IMPACTS

Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to utilities. The Planning Department’s Initial Study Checklist provides a framework of topics to be considered in evaluating potential impacts under CEQA. Implementation of a project could have potentially significant impacts related to energy or telecommunications infrastructure if it were to:

- Require or result in the construction of new energy or telecommunications infrastructure, or expansion of existing facilities, the construction of which could cause significant environmental effects.

The question of whether there would be wasteful use of energy, as in the Initial Study Checklist, is dealt with in Section IV.Q, Minerals and Energy Resources.

Approach to Analysis

Typically, EIR’s compare the electrical and natural gas demand from the project to the capacity of existing infrastructure. While this comparison is applicable to transmission capacity from Oakland to the Development Plan Area, the comparison is not applicable to distribution capacity within the Development Plan Area. This is because the Proposed Project includes an entirely new electrical and natural gas distribution system. Therefore, a detailed analysis of the capacity of particular switchgear and distribution lines or gas pipes on the Islands is not needed.

For the Proposed Project, electrical and natural gas demand estimates were created using an energy modeling software program called eQUEST. Engineers developed computer models of seven different generic building types, and made assumptions regarding their energy efficiency. See Section IV.Q, Mineral and Energy Resources, for further discussion.

It was not necessary to model the size of telecommunications distribution facilities, because the conveyance of digital signals does not require large conduits.

Proposed Project’s Electricity and Natural Gas Demand

As discussed further in Section IV.Q, Minerals and Energy Resources, pp. IV.Q.13 – IV.Q.15, provided that the project sponsors adopt the recommendations of the Treasure Island Development Energy Study, the Proposed Project’s electrical peak demand is estimated at 11.4 MW.

---

MW and annual electrical energy consumption at 58,500 MWh.\textsuperscript{142} The Proposed Project’s peak natural gas demand is estimated at 42.6 million British thermal units per hour (“Btu/hr”) and annual gas consumption at 980,000 therms per year.\textsuperscript{143} Total annual energy consumption would be approximately 297,500 million Btu/yr. As discussed in Section IV.Q, Mineral and Energy Resources, pp. IV.Q.10 – IV.Q.15, these estimates assume various strategies for energy demand reduction (“iteration #4”), using reasonable assumptions of what would be expected to be built, given regulatory requirements, Treasure Island Green Building Specifications, and typical construction practices in the Bay Area, including meeting a LEED Gold equivalent, energy conservation measures, no space cooling provided for low-rise and medium-rise residential buildings, and using gas-fired baseboard heating for these residential buildings. Also, these estimates are for full build-out and include energy demands associated with new infrastructure (e.g., wastewater treatment) as well as existing uses to be retained.

**Proposed Project Facilities**

The following discussion includes preliminary concepts for the proposed electricity and natural gas systems. As discussed in Chapter II, Project Description, master utility plans for the electrical and gas system service would be prepared in coordination with the SFPUC. Long-term aspirational goals in the Sustainability Plan for Treasure Island are to reduce energy demand, create sustainable supply, and achieve carbon neutrality.\textsuperscript{144}

**Electricity**

Under the Proposed Project, most of the electric power would be generated off-site. The Term Sheet states, “The Authority [TIDA] anticipates that the Project will continue to purchase all of its electricity from Hetch Hetchy Water and Power \textsuperscript{145}, or other City sources so long as it is reasonably available for the Project’s needs, the level of service is substantially equivalent or better than that available on the open market, it can be separately metered and implemented at comparable business terms and without additional delay (including delivery of service to construction sites), and the price is equivalent or less than then prevailing market rates for comparable types of loads.”\textsuperscript{146} In addition, on-site renewable energy could be developed or caused to be developed by the power provider, TICD, or other vertical developers (e.g., rooftop solar panels), and/or by third-party power providers. The project sponsors have committed to meeting 5 percent of peak electric demand with on-site renewable sources, such as (but not limited to), solar photovoltaics.

\textsuperscript{142} Ibid, p. 1.  
\textsuperscript{143} Ibid, Treasure Island Energy Iteration Comparison, following p. 23.  
\textsuperscript{144} 2006 Treasure Island Sustainability Plan, p. 39.  
\textsuperscript{145} Hetch Hetchy Water and Power is the name of the entity, and does not mean the dam and reservoir called Hetch Hetchy.  
\textsuperscript{146} 2006 Term Sheet, Section IV(D), p. 25.
Under the Proposed Project, all heating and cooling would provided at the individual building level and independent from adjacent buildings. Chapter VI, Project Variants, discusses possible District Energy Plants and other variants to the approach to providing heating and cooling.

The following discussion begins with the transmission of electric power to the Islands.

*Electricity Distribution to Treasure Island*

The existing 12 kV distribution line described in the Setting would continue to be used. It has sufficient capability to transmit peak demand via the distribution facilities from the Davis Substation in Oakland to the submarine cables (as discussed under “Setting”) to carry the estimated peak (coincident) demand for the Proposed Project.147

The electrical service to Treasure Island from Oakland is considered a “radial service,” i.e., it has one point of connection to the grid. For demand less than 20 MW, PG&E does not typically require a redundant service point for reliability.148

Although the capacity is sufficient, a number of upgrades to the existing off-site electrical system could be made to improve capacity and reliability. Figure IV.K.7: Proposed Off-Site Electrical System shows the proposed off-site electrical facilities that would support the Proposed Project. These are discussed in Chapter VI, Project Variants, Section F, “Off-Site Electrical Distribution Improvements.”

*Distribution System on Treasure Island and Yerba Buena Island*

The existing electrical distribution system on Treasure Island would be completely replaced in phases during project buildout (with the exception of the infrastructure within the Jobs Corps and Coast Guard properties). Starting at the terminus of the submarine cables, the new distribution system would include a new switchgear in an outdoor fenced enclosure (i.e., 15 kV class) located near the southeast corner of Treasure Island. The submarine cables would be connected to this switchgear through separate breakers, providing a redundant supply.149 The switchgear would provide connection points for the two existing trailer-mounted diesel generators, which would remain on-island as a back-up source.

The distribution system throughout the Proposed Project would consist of looped 600 amp, 12 kV, main underground feeder system, with radial and looped 200 amp circuits feeding transformers and service cables to residential and commercial buildings.

---

147 *Infrastructure Update*, Chapter 11, 8/18/2009 Addendum, Section 11.2.4.
148 *Infrastructure Update*, Chapter 11, 8/18/2009 Addendum, Section 11.2.2.
149 *Infrastructure Update*, Chapter 11, Addendum, Section 11.2.4.
FIGURE IV.K.7: PROPOSED OFF-SITE ELECTRICAL SYSTEM
A joint utility trench would follow the proposed roadway layout, and would accommodate electric, natural gas, telecommunications, and cable television lines. Existing service lines would remain in place until new service is established, to avoid interruptions.

- Utility service to the Job Corps campus and buildings would be maintained throughout the phased buildout of the Proposed Project. Electricity service to the Job Corps campus would be more robust under the Proposed Project. Certain modifications of connections would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process for each major phase.

- Electrical service to the property line of the Coast Guard Station and Sector Facility would be maintained during buildout of the Proposed Project. Certain modifications to the connections may be necessary. Details would be worked out during the design process.

- TIDA and the Coast Guard have agreed that they would enter into a construction coordination Memorandum of Understanding (MOU). The MOU would include (among other things) a process for the Coast Guard to notify TIDA when it is considering modernization projects, so that utility-demand modifications can be coordinated. Regarding future electrical demand, the Coast Guard has no details for its future expansion or modernization plans at this time. Modernization plans may be more energy intensive, since new technology often requires more power than older equipment. However, because no modernization projects are currently defined, it is too speculative to estimate a future increase in electricity use for the Coast Guard.

**Electricity Supply**

SFPUC Electric Resources. As described under “Setting” above, the SFPUC generates power from hydroelectric facilities in the Sierra Nevada Mountains and also purchases power. As discussed further in Section IV.Q, Mineral and Energy Resources, these electric resources would provide most of the electricity for the Proposed Project.

On-Site Renewable Generation. The Infrastructure Plan includes renewable electricity generation on Treasure Island, including photovoltaic solar power and possibly small, vertical-axis wind turbines. The project sponsors have committed to meeting 5 percent of peak electric demand with on-site renewable sources, such as (but not limited to), solar photovoltaic. This target would be achieved by designing building rooftops to accommodate photovoltaic systems, potentially using solar water heating, and potentially implementing demonstration-level wind energy production.

---

150 This information is based on the results of a meeting between TIDA, TICD, and U.S. Coast Guard representatives held on October 29, 2010.

151 *Infrastructure Update*, Chapter 11, 8/18/2009 Addendum, p. 5 and Section 11.8.
The Proposed Project would permit development of either ground-mounted or roof-mounted photovoltaic systems. With current technology, about 1.4 to 3 acres of photovoltaic panels would be required to meet the goal of 5 percent of the peak power demand. Roof-mounted and/or ground-mounted panels would satisfy this goal. The Proposed Project would include sufficient rooftops to provide space for 1.4 to 3 acres of photovoltaic panels, and the draft *Design for Development* permits rooftop-mounted photovoltaic systems on all buildings, including historic Buildings 1, 2, and 3.

The types of wind power systems are not known. Changes in technology are expected over the next few years as site preparation activities are being conducted that make it difficult to accurately predict the precise nature of the equipment likely to be used. Therefore, wind energy production facilities and locations are expected to be selected at some time in the future and would undergo appropriate environmental review at that time.

**Emergency Back-up Power.** The Proposed Project would use the existing, two, trailer-mounted diesel-powered generators (2 MW capacity each) currently owned by the SFPUC, to provide for
emergency back-up power. The generators would be relocated from their existing location near Building 3 to a place near the new switchgear. These generators would be sufficient to provide power for critical needs during a blackout.

**Proposed Natural Gas Infrastructure**

Under the Proposed Project, natural gas would be conveyed to the Islands, and distributed by PG&E. All heating and cooling would provided at the individual building level and independent from the adjacent buildings.

As discussed under electricity above, the Proposed Project would include on-site renewable energy. No particular target has been established for renewable energy to take the place of natural gas use, but if technologies such as solar hot water would be used, then some reduction of natural gas use for heating would occur.

Natural gas would be supplied to the Islands through the existing PG&E submarine pipeline. Portions of the pipeline have been upgraded as part of the construction of the east span of the Bay Bridge.

Proposed natural gas distribution lines would be installed in the joint utility trench described above. Unlike the existing system, these new distribution lines would be owned by PG&E and metered for downstream users. As with electrical service, existing gas lines would be left in place until new infrastructure has been completed to avoid interruptions in service. Construction of new gas distribution would generally correspond to the phases of building construction on Treasure Island.

- Utility service to the Job Corps campus and buildings would be maintained throughout the phased buildout of the Proposed Project. Natural gas service to the Job Corps campus would be more robust under the Proposed Project. Certain modifications of connections would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process for each major phase. The Coast Guard does not currently have natural gas service, so the Proposed Project would not need to maintain service during construction. The Proposed Project would continue to provide natural gas service to Yerba Buena Island to serve the new development. If in the future, the U.S. Coast Guard wishes to add natural gas service for the Coast Guard facilities on Yerba Buena Island, the service could tie in to the supply lines on Yerba Buena Island.

**Proposed Telecommunications Project Facilities**

The entire telecommunication system (land-based telephone and cable television) would be replaced as part of the Development Program. Project sponsors would identify, and negotiate with, telecommunication service providers to design and construct a system to serve the Islands. It is anticipated that the major links of the telecommunication distribution network would be included in the joint utilities trench described above. If cellular telephone service towers are needed, they would likely be built on top of one or more of the taller proposed buildings.
Utility service to the Job Corps campus and buildings would be maintained throughout the phased buildout of the Proposed Project. Telecommunications service to the Job Corps campus would be more robust under the Proposed Project. Certain modifications of connections would be necessary at the perimeter of the Job Corps site. Details would be worked out during the design process for each major phase.

The Coast Guard Station and Sector Facility is updating its telecommunications and computer systems. Land-based telecommunications services to the property line of the Coast Guard Station and Sector Facility would be maintained during buildout of the Proposed Project. Certain modifications to the connections may be necessary. Details would be worked out during the design process. As discussed above on p. IV.K.78, TIDA and the Coast Guard have agreed that they would enter into a construction coordination Memorandum of Understanding (MOU). The MOU would include (among other things) a process for the Coast Guard to notify TIDA when it is considering modernization projects, so that utility-demand modifications can be coordinated.

Project Impacts

Construction

Impact UT-15: Construction activities associated with energy and telecommunication infrastructure of the Proposed Project could result in air quality, noise, water quality, transportation, hazardous materials, cultural resources, and biological impacts, as further evaluated under those EIR topics. (See Significance Determinations in other topics.)

As discussed above, the Proposed Project would include replacement of the electrical, natural gas, and telecommunications distribution infrastructure serving Treasure Island and Yerba Buena Island (up to the property lines of the Jobs Corps and Coast Guard). The existing infrastructure would continue to operate until new infrastructure is ready, following in sequence with the overall development construction phasing. In addition, repairs and upgrades to existing infrastructure would continue as needed until replacement.152

The second significance criterion, above, indicates that the Proposed Project would have a significant adverse effect if it would require, or result in, the construction of new energy or telecommunications infrastructure, where the construction would cause significant environmental effects. Demolition, land clearing, grading, and other ground-disturbing construction activities would temporarily affect local air quality during each construction phase, causing temporary and intermittent increases in particulate dust and other pollutants. Operation of construction trucks

152 Infrastructure Update, Chapter 11, 8/18/2009 Addendum, Section 11.6.
and heavy equipment would create fugitive dust and emit nitrogen oxides, carbon monoxide, sulfur dioxide, reactive organic gases or hydrocarbons, and particulate matter, as a result of diesel fuel combustion. Use of hazardous materials in new construction could result in emissions of toxic air contaminants. Construction activities and heavy equipment would also cause temporary and intermittent increases in noise during each construction phase. Excavation may result in release of volatile contaminants in the ground or groundwater, and excavated soils could contain hazardous materials. Construction activities could pollute run-off from construction areas. Construction trucks and other vehicles could cause transportation impacts on local roads and/or the Bay Bridge. Construction involving, or near, historical structures could damage those structures. Construction activities could adversely affect biological resources.
Impacts of construction, including energy or telecommunications infrastructure, and any related mitigation measures are discussed in Section IV.E, Transportation, pp. IV.E.67 – IV.E.71 (Impact TR-1); Section IV.F, Noise, pp. IV.F.14 – IV.F.20 (Impacts NO-1 and NO-2); Section IV.G, Air Quality, pp. IV.G.24-IV.G.38 (Impacts AQ-1 – AQ-4); Section IV.M, Biological Resources, pp. IV.M.41-IV.M.63 (Impacts BI-1 – BI-6); Section IV.O, Hydrology and Water Quality, pp. IV.O.35 – IV.O.41 (Impacts HY-1 – HY-7); and Section IV.P, Hazards and Hazardous Materials, pp. IV.P.39 – IV.P.51 (Impacts HZ-1 – HZ-9).

**Operation**

There is no environmental-impact significance criterion regarding adequacy of electricity, natural gas, and telecommunications delivery infrastructure. Although the existing electricity, natural gas, and telecommunications delivery infrastructure on Treasure Island and Yerba Buena Island would be inadequate to serve the development program, entirely new infrastructure would be part of the Proposed Project. As explained above, this new infrastructure would be adequate to serve the needs of the Proposed Project.

See Section IV.Q, Mineral and Energy Resources, for discussion of energy demand and supply.

**Cumulative Impacts**

**Impact UT-16: Construction and operation of the Proposed Project would not result in cumulative impacts on energy and telecommunication infrastructure. (No Impact)**

As discussed above, construction of the electricity, natural gas, and telecommunications delivery infrastructure would add incrementally to the dust, noise, traffic, and other impacts of construction of the Proposed Project. However, their contribution to these impacts would be small compared to the geotechnical stabilization, street construction, and building construction activities to develop the Proposed Project, in combination with ongoing construction of the Bay Bridge East Span project and the Yerba Buena Island Ramps Improvement Project.

Upon completion, electricity, natural gas, and telecommunications delivery infrastructure would be mostly underground. It would not generate appreciable noise, impede traffic, or emit air pollution.

There would be no significant cumulative impacts regarding construction or operation of the electricity, natural gas, and telecommunications delivery infrastructure.