Draft

SUNNYVALE WATER POLLUTION CONTROL PLANT PRIMARY TREATMENT FACILITY PROJECT

Initial Study / Mitigated Negative Declaration

Prepared for
City of Sunnyvale

November 2014

ESA

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CITY OF SUNNYVALE

California Environmental Quality Act (CEQA) Draft Initial Study / Mitigated Negative Declaration

1. Introduction

This draft Initial Study /Mitigated Negative Declaration (IS/MND) evaluates the potential environmental effects of the City of Sunnyvale's Primary Treatment Facility Project (the project) proposed at the Water Pollution Control Plant (WPCP). The project would replace some existing facilities at the WPCP with new facilities. The City of Sunnyvale City Council will review the proposed project and decide whether it will be implemented. A detailed description of the proposed project is provided in the Project Description, Section 2, below.

The environmental approval process, which is regulated by California Environmental Quality Act (CEQA) Statutes and Guidelines, includes circulation of this IS/MND for public and agency review for a 30-day period. Written comments received during this review period will then be reviewed and any additions or revisions needed based on the comments received will then be incorporated into a final IS/MND. The City Council, at a regularly scheduled meeting, will review all of the related material and make a determination as to adequacy of this analysis. A Notice of Determination, if made, would then be filed with the County Recorder. The proposed project would proceed after the filing of the Notice of Determination.

The organization and format of this document is stipulated by the CEQA Guidelines. Section 4 of this IS/MND, "Environmental Checklist," includes 18 specific elements (e.g., Air Quality, Cultural Resources, Transportation and Traffic, etc.) which must be addressed. For each item on the Environmental Checklist, this Initial Study examines the project to identify potential effects on the environment and discusses anticipated impacts. The four levels of impact are "Potentially Significant,", "Less Than Significant with Mitigation Incorporation," Less than Significant Impact," and "No Impact." A discussion relating the anticipated impacts to each of the CEQA issues then follows. If a significant impact is identified, mitigation is presented to offset any potentially significant impacts. Each checklist item contains a reference section, which lists technical studies, agencies, and other resources consulted in this evaluation.

1.1 Project Specifics

1. Project Title and Address:	Sunnyvale Water Pollution Control Plant Primary Treatment Facility Project 1444 Borregas Avenue Sunnyvale, CA 94089
2. Lead Agency Name and Address:	City of Sunnyvale Department of Public Works 456 West Olive Avenue Sunnyvale, CA 94086
3. Contact Person and Phone Number:	Mr. Craig Mobeck (408) 730-7834
4. Project Sponsor's Name and Address:	City of Sunnyvale Environmental Services Department, Water Pollution Control Plant 1444 Borregas Avenue Sunnyvale, CA 94089
6. General Plan Designation(s):	Environmental Services
7. Zoning Designation(s):	(P-F) Public Facility
8. Description of Project:	See Section 2
9. Surrounding Land Uses and Setting.	See Section 2.

2. Project Description

The City of Sunnyvale (City) operates the Donald M. Somers Water Pollution Control Plant (WPCP) that serves the residents, businesses and industries in the city of Sunnyvale. The plant was originally constructed in 1956, and the City has periodically increased treatment capacity as the City's population has grown and has incorporated new developments in wastewater treatment processes to improve effluent[1] water quality. The last major upgrade to the WPCP was completed in 1984.

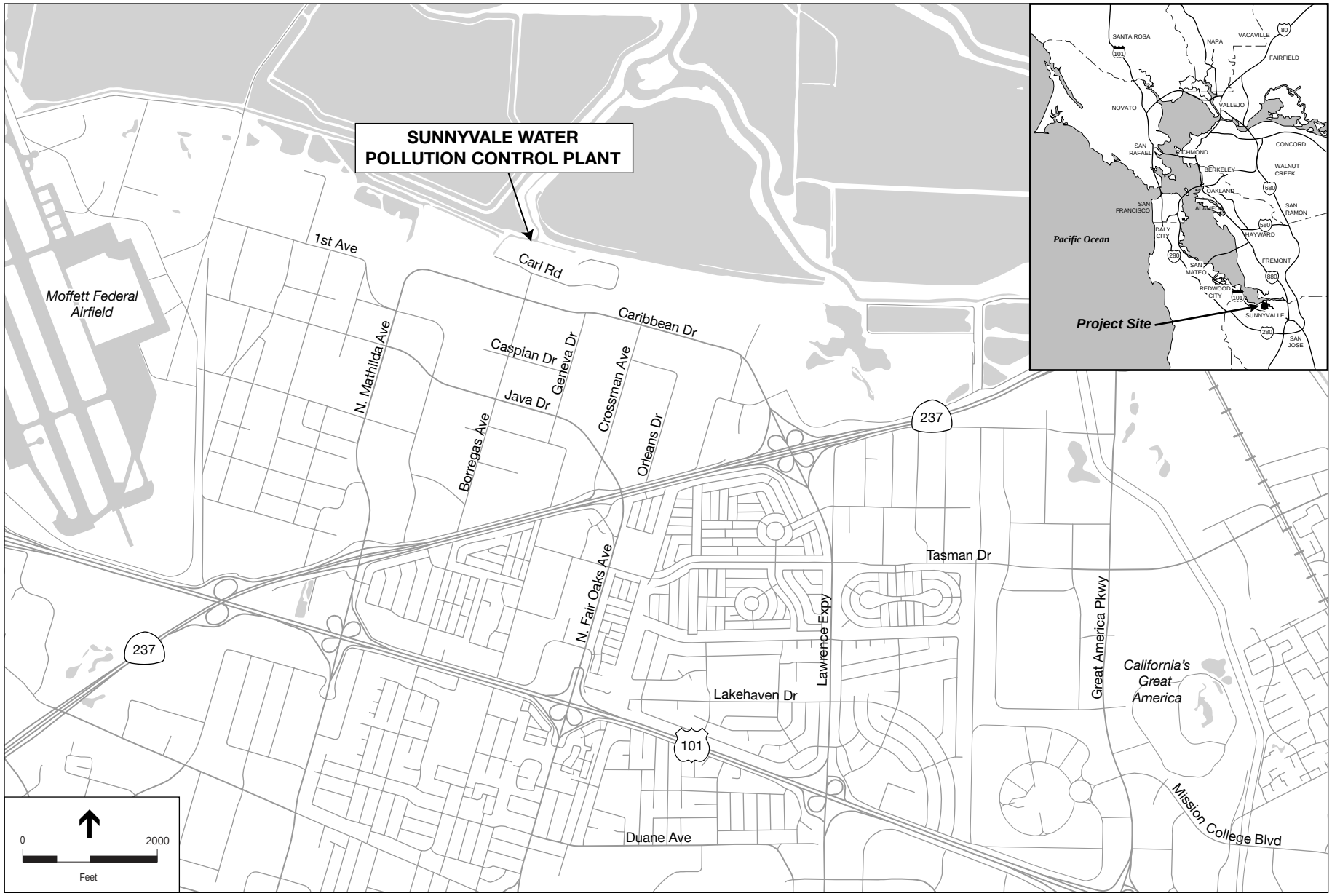
The City proposes to implement the Primary Treatment Facility Project (the project) to replace existing, aging facilities at the WPCP and to meet the requirements of environmental regulations. The City is the lead agency for the preparation of this Initial Study/Mitigated Negative Declaration (IS/MND) in accordance with the requirements of the California Environmental Quality Act (CEQA).

2.1 Project Location and Vicinity

The WPCP includes a main plant and two oxidation ponds[2] (see **Figures 1 and 2**). The main plant occupies an approximately 16.6-acre site at 1444 Borregas Avenue in Sunnyvale, Santa Clara County and is accessed via Carl Road. The facility is approximately 0.8 miles north of Highway 237 and 1.5 miles north of Highway 101. Moffett Airfield is about 1.5 miles to the west. The WPCP is adjacent to the southern end of San Francisco Bay (the Bay) and includes 440 acres of oxidation ponds (Ponds 1 and 2) along the Bay margin, as shown on **Figure 2**. The Cargill Channel, Moffett Channel, Santa Clara Valley Water District's (SCVWD) Pond A4, Guadalupe Slough, and the San Francisco Bay Trail also are adjacent to Ponds 1 and 2. The Moffett Channel contains aquatic and salt marsh habitat for special-status species. The surrounding dry land area is primarily used for industrial and recreation purposes: the Sunnyvale Materials Recovery and Transfer Station (SMaRT Station) and the Household Hazardous Waste Drop-off Site abut the main plant to the east and south, respectively; the Sunnyvale Landfill (now closed and traversed by numerous trails) borders these facilities. The Sunnyvale West Channel forms the main plant's western boundary; the Sunnyvale East Channel borders the landfill further east. These surface water drainages, managed by Santa Clara Valley Water District (SCVWD), discharge to Moffett Channel and/or the Guadalupe Slough and, ultimately, to the Bay. As shown in Figure 2, the Don Edwards National Wildlife Refuge, which encompasses portions of the South Bay Salt Ponds project, surrounds Ponds 1 and 2 and SCVWD Pond A4.

The main project facilities would occupy the east side of the main plant, north of Carl Road (**Figure 3**). Most of this parcel is a below-grade depression surrounded by berms along the plant's fence line; the area is currently used for solids dewatering and drying and clean-out of the facility's digesters[3]. Rectangular shaped dewatering tile beds[4] occupy the center of the site.

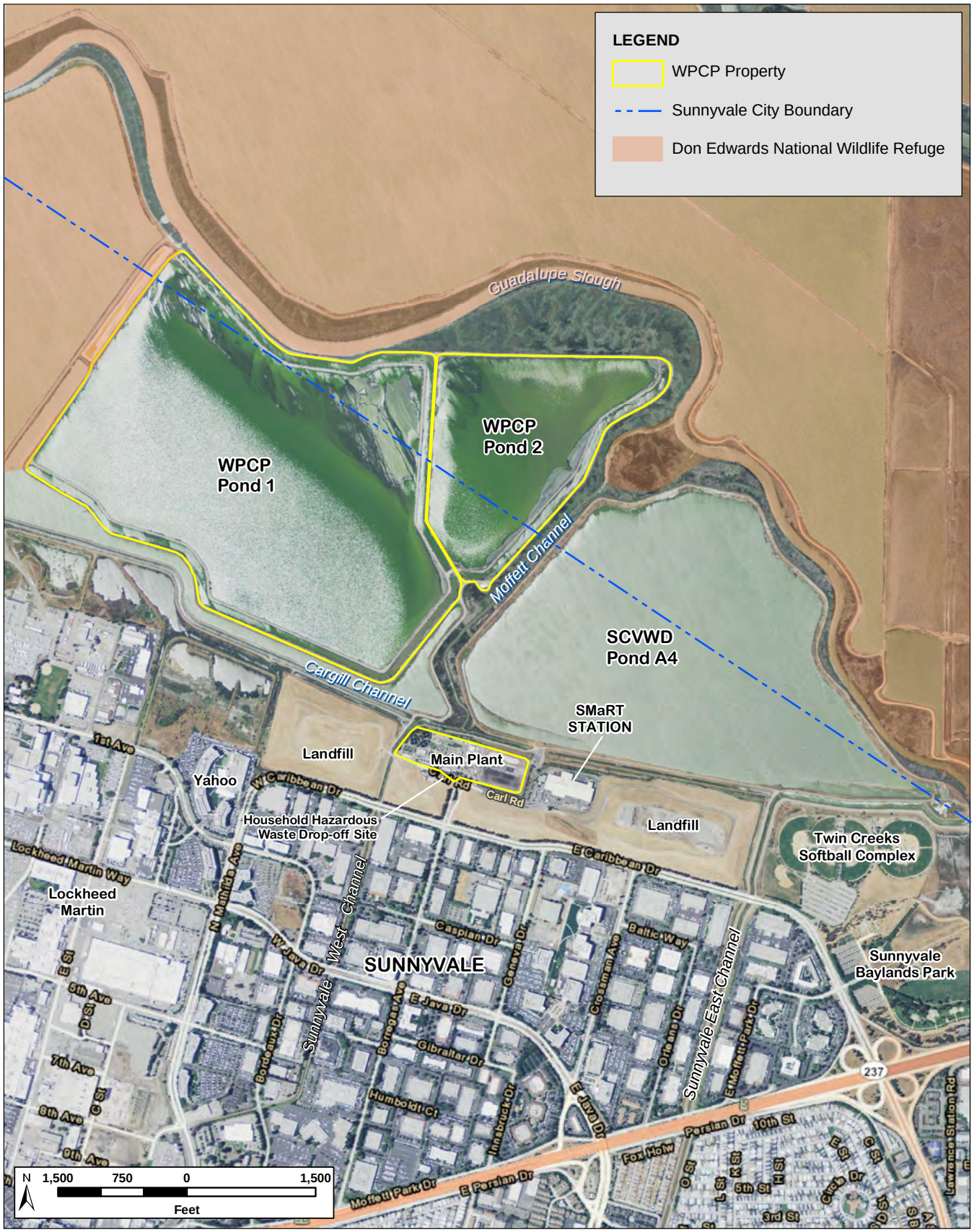
1 The water that is released or discharged after wastewater treatment.
2 Bodies of wastewater where oxygen is added to the water to promote the growth of algae and microorganisms, which consume solids and nutrients.
3 Tanks in which bacteria convert organic matter in sludge into a stable, relatively odor-free material.
4 Slotted tile beds where water drains away from biosolids.



SOURCE: Thomas Brothers; ESA

City of Sunnyvale Primary Treatment Facility . 120457

Figure 1
Site Location Map



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SOURCE: H.T. Harvey & Associates; adapted by ESA

Figure 2
Sunnyvale Water Pollution Control Plant Area Map

SOURCE: Google Maps; ESA

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Figure 3
Primary Treatment Facility Project Area

2.2 Project Background and Objectives

Existing Operations

The WPCP combines physical, chemical, and natural biological processes to remove pollutants from wastewater and produce effluent that meets or exceeds water quality standards. Wastewater enters the WPCP via the headworks and then is treated at three distinct levels: primary, secondary, and tertiary. **Figure 4** presents a process flow diagram of WPCP operations. Existing facilities are permitted to accommodate an average dry weather flow of 29.5 million gallons per day (mgd). The City is proposing to replace the headworks and primary treatment facilities. The existing headworks and primary treatment facilities are described below; section 2.3 describes proposed facilities.

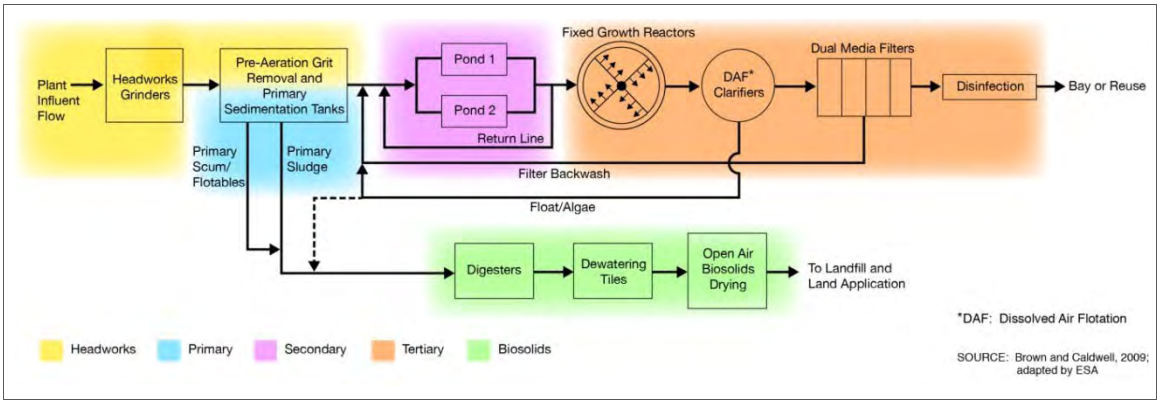


Figure 4
Process Flow Diagram for Sunnyvale WPCP

Headworks

The existing headworks facility consists of grinders and an influent pump station, located in the Primary Control Building. Untreated wastewater (influent) enters the WPCP 30 feet below ground where large debris is reduced in size by the grinders. Next, the wastewater is pumped up to ground level and to the primary treatment process by the three influent pumps, driven by engines fueled with methane gas (a byproduct of the digester process; City of Sunnyvale, nd). The existing three pumps have a capacity of 25 million gallons per day each. An auxiliary pump station provides backup to the influent pump station (Brown and Caldwell, 2009). Influent is pumped from the pump station to the grit tanks. At the grit tanks, heavier, sand-sized material is removed from the wastewater to protect downstream equipment from wear. The grit handling system washes the captured grit to return organics to the flow and dewaters the washed grit for disposal.

Primary Treatment

The primary sedimentation process separates and removes suspended solids and scum (floating material such as oil and grease). Following grit removal, the wastewater continues to the primary sedimentation basins, where heavier organic materials (sludge) settle to the bottom, and lighter materials (scum) float to the top. Sludge and scum pumps convey settled solids and floatables from the tanks to the digesters. The remaining wastewater, which is almost free of solid matter, is now called primary effluent and flows to the oxidation ponds for further treatment.

Need for the Project

The City needs to replace the headworks and the primary treatment system to ensure that the WPCP can continue ongoing operations, as described in greater detail below:

- ***Need for Headworks Replacements***. The Bay Area Air Quality Management District (BAAQMD) issued a Title V permit to the City of Sunnyvale WPCP in 2000. A Title V permit is an operating permit required by the U.S. Environmental Protection Agency (USEPA) under the Clean Air Act. This permit sets emissions limits for equipment and processes at the WPCP. The existing influent[5] pumps are driven by internal combustion engines that rely on digester gas, which provides a reliable way to continue pumping influent to the plant during power failures, avoiding sewage spills. The engines are relatively old and were exempted from certain emission regulations in the Title V permit when the permit was renewed in 2007. The exemption is temporary, however, and influent pumps at the WPCP must comply with Best Available Control Technology requirements of this permit by January 1, 2016 (BAAQMD, 2013). In response to these requirements, the proposed project would involve installing new influent pumps driven by electric motors and decommissioning the older engines. Headworks replacement is also needed because the existing headworks lack screening facilities to remove debris. As a result, the effectiveness of the existing grit removal system is less than desired. Adding screening and replacing the grit removal system would improve the effectiveness of subsequent treatment processes, as well as to reduce long-term maintenance of equipment.

- ***Need for Primary Treatment Replacements***. The City constructed or modified the ten primary sedimentation tanks (PSTs) between 1956 and 1984. In 2003, a structural evaluation identified multiple deficiencies and many areas of deterioration in the PSTs and noted that in the event of a major earthquake, the structure may fail. Ultimately, such an event could lead to sewer collection system overflows. Subsequent studies confirmed the need to replace the PSTs, developed strategies for addressing deficiencies without interrupting WPCP operations while working within the limited available space (by constructing new PSTs at the proposed location and including a Chemically Enhanced Primary Treatment [CEPT] system), and developed design recommendations. Due to the significance of damage that may be caused by a seismic event and the relatively short remaining useful life of the existing PSTs, the City considers replacing the PSTs a high priority project.

Due to the overall age of existing facilities at the WPCP and anticipated environmental regulations, the City has also initiated a long-term planning effort to assess the condition, performance, and capacity of all of its existing facilities and to identify replacements necessary for the continued operation of the WPCP for the next 20 years (to 2035). The City's process includes development of a master plan (Master Plan) that will identify projects, estimated costs, and recommended timing for repair and replacement of infrastructure and new facilities to meet existing and developing regulatory requirements. The City intends to implement the Primary Treatment Facility project whether or not the Master Plan is approved. The Master Plan will undergo a separate environmental review pursuant to CEQA.

Project Objectives

Project objectives include the following:

[5] Influent is the untreated wastewater entering a treatment plant from the sewer system.

- Replace the aging, seismically-deficient primary sedimentation tanks with updated facilities at the earliest possible opportunity;
- Comply with Title V permit requirements;
- Construct new facilities without interrupting WPCP operations;
- Ensure new facilities are compatible with projected flows and future potential treatment system processes; and,
- Implement the proposed project in a cost-efficient manner.

2.3 Proposed Facilities

The proposed project would construct new headworks and primary treatment facilities in the eastern portion of the main plant. **Table 1** summarizes proposed changes to WPCP operations with implementation of the project. Facilities are designed to accommodate a peak hourly flow of 58.5 million gallons per day (mgd) at buildout, based on a projected average dry weather flow (ADWF) of 19.5 mgd. During the 1980s, canneries in Sunnyvale sent industrial wastewater to the WPCP. The existing WPCP was designed to treat the high quantity of wastewater flowing from the industrial canning and was consequently permitted to treat 29.5 mgd, ADWF. Since the 1980s, however, these industrial uses have been replaced by urban uses, and as a result the quantity of wastewater currently treated at the WPCP is lower than permitted, averaging 14 mgd (Brown and Caldwell, 2009b). Consequently, existing capacity exceeds need. The proposed Primary Treatment Facility project is designed to meet future (2035) capacity.

TABLE 1
SUMMARY OF PRIMARY TREATMENT FACILITY PROJECT

Project component		Existing Facilities	Proposed Facilities
Headworks		• Grinders and influent pumps driven by internal combustion engines • Grit processing and pre-aeration tanks	• Electrical pumps • Screening facility and screenings/grit handling building • Electrical building • Odor control facility
Primary Treatment Facilities		Primary sedimentation basins (10), constructed between 1956 and 1984 Utilities Tunnel Effluent pipeline, junction boxes	• 6 primary sedimentation tanks • CEPT facility • New utilities tunnel • New primary effluent pipeline and junction boxes
Other	Sludge Dewatering	Sludge dewatering at southeast portion of main plant	Mechanized dewatering unit.
	Access Roadway and Fencing	Plant access is via Carl Road at Borregas Road.	Temporary construction gate, east of Borregas
		Fencing surrounds western portions of main plant	Extend fencing to encompass site extension to the south and east
	Heat Recovery Improvements	Heat from influent pump engines is used to aid digesters	Install heat recovery system at power generation facility
	Switchgear Building and Standby Generator	4.16kV Main Switchgear and 80kW diesel engine generator	12 kV Main Switchgear and 2000 kV diesel engine generator

The headworks and primary sedimentation tanks are designed with flood proofing for a 100-year flood event plus anticipated sea level rise consistent with projections presented by the National Research Council in the "Curve III scenario", assuming construction of the Sunnyvale East and West Channels Flood Protection project (Sunnyvale East and West Channels project) proceeds as planned (Carollo, 2013). The Sunnyvale East and West Channels project would install floodwalls along the levees surrounding Moffett Channel on the bayside of the main plant site, enlarge levees around Moffett Channel and the Sunnyvale West Channel just upstream from the WPCP, and install other flood protection infrastructure farther upstream along both Sunnyvale West Channel and Sunnyvale East Channel (SCVWD, 2013).

Following construction of the new facilities, the existing headworks and primary treatment facilities would be decommissioned in place or demolished. This section describes the proposed project facilities.

Headworks

Proposed changes to the headworks facilities include:

- **Influent Pump Station.** The City proposes to construct a new influent pump station and electrical building. The pump station would be housed in an approximately 80 foot by 50 foot below grade concrete structure that would extend approximately one foot above the future ground surface. The pump station would include a wetwell, six variable speed pumps of different sizes (one pump would be standby; the pumps would be phased in over time as flows increase), various gates to isolate and channel flows into and through the pump station, monitoring systems, and local and remote controls. The proposed headworks electrical building, an approximately 30 foot by 50 foot concrete block masonry building, would house electrical equipment. The wet well of the pump station would be covered and ventilated, and the ventilated air would be sent to an odor scrubber. The pump station would be covered and ventilated, and the ventilated air would be sent to the atmosphere.

- **Screening Facility.** The City proposes to construct a new screening facility to replace the function of the existing grinders. The screening facility would divert large debris from the wastewater, and would consist of covered concrete channels with bar screens, a bypass channel, and washer-compactors. The screening facility would be approximately 50 foot by 75 foot and installed largely below grade. Individual screens would be housed in a fiberglass enclosure, which would extend approximately 5 feet above the future ground surface. The channels in which the bar screens are installed would be covered and ventilated air would be sent to an odor scrubber.

- **Screenings/Grit Handling Building.** The proposed system would include three grit removal basins with isolation gates, grit slurry pumps for each tank (one operating/one standby – 6 total), fine grit washers and a grit storage bin. The grit washers would be collocated with the grit storage bin and screenings storage bin. The screenings/grit handling building would be a concrete block structure and would extend about 20 feet above the future ground surface. The lower level of the building would be ventilated and the air sent to an odor scrubber. The upper level of the building would be ventilated and the air discharged to atmosphere.

- **Odor Control Facilities.** The odor control system would include covers to contain odorous air emissions at portions of the primary treatment facilities, an exhaust fan system for capturing fugitive emissions, and a bioscrubber[6] to treat odors.

Figure 5 shows the location of proposed headworks facilities.

Primary Treatment

Primary treatment facilities that would be installed as part of this project to replace existing facilities include:

- **Primary Sedimentation Tanks.** The proposed facility would include six approximately 20-foot wide by 115-foot long tanks, each with sludge and scum collector mechanisms and a primary sludge pump. One backup primary sludge pump would be associated with every two tanks (9 pumps total). There would also be scum boxes and pumps (four pumps total, two standby). In addition, there would be influent and effluent channels, isolation gates, and an influent channel pre-aeration system. The primary sedimentation tanks would extend about 15 feet above the future ground surface.

- **Chemically Enhanced Primary Treatment (CEPT) Facility.** The CEPT facility would store chemicals that could be used to enhance the primary treatment process by increasing the speed of settling of the suspended solids. The facility would only be utilized during peak flows and/or when one tank is out of service, providing flexibility and redundancy. The proposed facility includes two 5,000 gallon ferric chloride storage tanks and metering pumps, two 100 gallon polymer[7] storage drums and metering pumps within an approximately 55 foot by 20-foot concrete containment area with canopy. The chemicals stored in the CEPT facility would be stored according to the California Building Code and other local and federal codes.

- **Primary Effluent Pipeline.** The proposed 60-inch diameter primary effluent pipeline would convey primary effluent from the sedimentation tanks to the primary effluent junction box. The pipeline would proceed north from a primary effluent (PE) distribution structure to the northern fenceline, and west along the fenceline to the PE junction box (see Figure 5).

- **Utility Tunnel.** A new below grade tunnel would connect the new PSTs to the existing digester complex. New primary sludge piping, hot water piping, and other utilities would be routed through the tunnel and connect to existing piping at the digester complex.

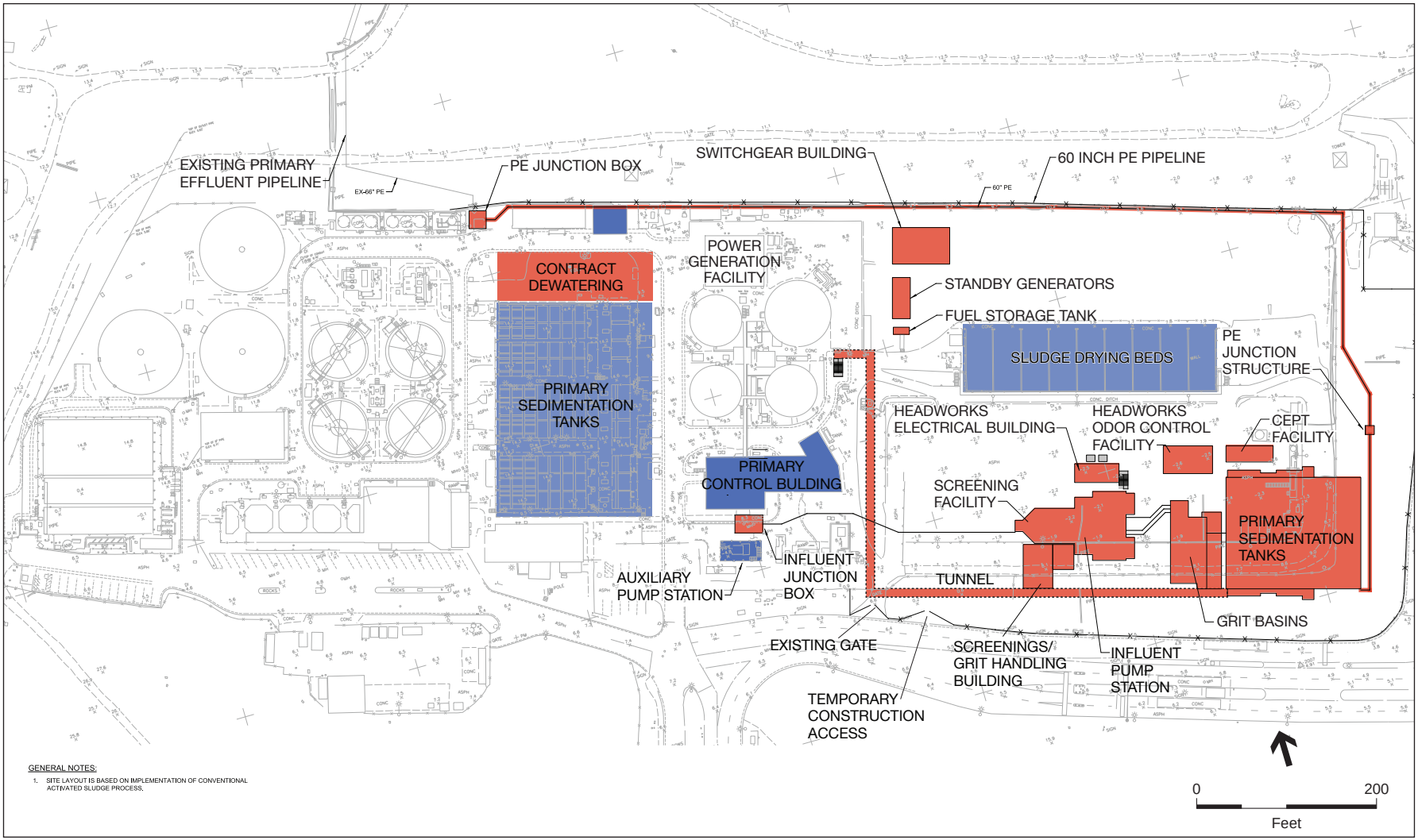
Switchgear Building and Standby Generator

A 12-kilovolt switchgear[8] and distribution system would be installed to serve the proposed headworks and primary treatment facilities. A masonry block building would house the switchgear. This building would include utility metering and provisions for heating, ventilation, and air conditioning; and provisions for two standby diesel generators (up to 2,500 KW each) with separate aboveground diesel fuel storage tanks. Only one generator would be installed, to be

6 The bioscrubber is a biological treatment process on a synthetic media contained within a vertical tower. Three bioscrubbers are proposed. Biologically active solution and media remove odorous compounds from air.

7 Polymer is a long chain-like carbon compound used in the treatment of wastewater to bind algae and other organic particles into a mass for easier removal.

8 Switchgears are used to control, protect, and isolate electrical equipment by disconnecting the relevant equipment or circuit from the electrical supply.



Proposed New Facilities

To Be Decommissioned or Demolished

Proposed Fencing, Temporary Construction Access, Existing Gate

SOURCE: Carollo Engineers; ESA

City of Sunnyvale Primary Treatment Facility . 120457

Figure 5
Site Layout

located outside the switchgear building in an approximately 16 foot by 46 foot enclosure for containment and sound attenuation.

Relocation of Dewatering

The objective of the dewatering process is to extract water from treated sludge to produce biosolids[9] with a cake-like consistency. At present, sludge is dewatered first in the tile beds; polymer is mixed into the sludge and then the sludge is spread across gravity drainage filter panels. Front end loaders then convey the dewatered sludge to the adjacent paved area and repeatedly spread and turn the material for drying. The existing site used for dewatering is the proposed location of the new headworks and primary treatment facilities. The City proposes to relocate dewatering to a site near the existing primary sedimentation tanks using a mechanized dewatering unit. The mechanized dewatering planned for the site would use belt filter presses to extract water from the sludge, reducing biosolids volume and facilitating subsequent treatment, disposal and reuse. This facility would be within a trailer and use a belt filter press supplied by a power feed from the plant. The dewatering contract would include off-hauling of the dewatered material (consistent with current practice) and would require that the haul trucks be parked adjacent to the dewatering unit for loading of the dewatered material.

Access Roadway and Fencing

In order to accommodate the primary treatment facility and necessary access for emergency vehicles, the plant's operational area would be expanded about 75 feet to the south and east beyond the existing fenceline. This would necessitate filling the adjacent drainage channel, enclosing drainage flows in a culvert, and moving the existing embankment and fencing. A new plant access road would be installed on top of the embankment adjacent to the fence, similar to the existing road and embankment configuration (see Figure 5). A temporary construction access road and gate would be installed to the east of the existing secondary gate (located east of the main entrance on Borregas Avenue). The project would not encroach beyond the northern fence line of the main plant; the SCVWD proposes to install a floodwall along the northern and western boundary of the main plant as part of the Sunnyvale East and West Channels project (SCVWD, 2013).

Ancillary Facilities and Lighting

Additional yard structures would include facilities to tie into existing influent sewers and distribute effluent flow. These would include the influent junction box, primary effluent junction structure, and the primary effluent junction box. Electrical ductbanks would be installed below grade, routed from the new Switchgear Building to the new Headworks Electrical Building as well as from the Switchgear Building to the western extent of construction under the Primary Treatment Facility project.

Equipment inside the existing power generation facility building would also be replaced. The power generation facility currently houses two engines that burn a combination of landfill gas, digester gas, and natural gas to generate electricity that powers the plant when connected in

9 Biosolids are the recyclable organic solid product removed from wastewater during the wastewater treatment process.

parallel with PG&E power. Waste heat is recovered from these two engines as well as from the existing influent pumps for use in plant processes. An updated exhaust heat recovery system to recover heat from the existing power generation facility engines would be installed. This heat is needed to replace the loss of heat from the existing influent pump engines.

Currently lights on poles (similar to streetlights) are operated at the site at night to ensure safe access to facilities, as the plant is operational 24 hours per day. Similar lighting would be installed on or around the new primary facilities on the main plant site to afford security cameras adequate lighting for 24 hour surveillance of the new facilities. Areas in front of the project area along Carl Road would be landscaped with a variety of shade trees, accent trees, and understory shrubs. Automatic irrigation, compliant with the California Model Water Efficient Landscape Ordinance, would be installed.

2.4 Construction Characteristics

Sludge Bed and Digester Basin Removal

The existing sludge dewatering tile beds and several small structures near the center of the project area would be demolished. Concrete and asphalt from demolition would be hauled offsite for reuse or disposal as determined by the City and the construction contractor. The material within the existing digester cleanout basin, including over-excavated materials, would be removed and stockpiled. The top two feet of soil from the entire project area would be excavated. The excavated soil may be tested to determine if the soil complies with site fill specification requirements. If excavated soils comply with the site fill specification requirements, they would be stockpiled and used for site surcharging (described below). For purposes of the environmental analysis in this document, however, it was assumed that all stockpiled materials would be hauled offsite to an appropriate facility for reuse or disposal in order to conservatively estimate environmental impacts of the Project.

Import Fill and Site Surcharging

Imported clean fill material would be brought onsite to backfill the project area to the design finished grade elevation. This would include backfilling of the drainage areas that border the project area to the south and east (the southeastern channel). Because a large portion of the site would be filled in with imported material, without a consolidation step, there would be different settlement properties between the imported and native material. To address potential differential settlement, approximately 10 feet of additional soil would be deposited on the project site and allowed to remain for three to five months. The weight of the added material would act to compact or consolidate the underlying soils, a process known as “surcharging.” This process allows for consistent soil settlement characteristics across the site. Following the consolidation period, some of the surcharged material would be removed from the site prior to construction. After the southeastern channel is consolidated, a box culvert would be constructed within the area to replace the drainage volume of the southeast channel. Bypass pumping will be provided from the time the southeast channel is filled to the time the box culvert is installed and operational.

As shown in **Table 2**, imported soil would be hauled to the project site for backfilling and site surcharging. After the soils have compacted, the contractor would remove excess soil (above the finish elevation) from the site. Soil and demolition material would be hauled to an appropriate facility for reuse or disposal. A portion of the surcharge material would be used to backfill around facilities constructed as part of site preparation, including the southeastern channel.

TABLE 2
EXCAVATION VOLUMES AND TRUCK TRIPS

	Volume (CY)	Truck Loads	Duration (days)
Site Preparation			
Import Volume Backfill Surcharge	168,000	14,000	98
Offhaul Volume Demolition Excavation Surcharge	95,000	8,000	48
Facilities Construction			
Import Volume Aggregate Base Course Concrete AC Paving	13,000	900	43
Offhaul Volume Excavation	24,000	2,000	12
Demolition			
Import Volume AC Paving	120	10	2
Offhaul Volume Demolition Excavation	1,500	104	5

Proposed Buildings and Structures

The initial steps of facility construction would involve grading and compacting the proposed access road along the south and east edges of the main plant and the staging area within the northern portion of the site (in the former digester cleanout basin and sludge drying bed area). Additional soil excavation would be required for placement of appropriate shoring for the proposed facilities. A portion of the excavated soil would be stockpiled and reused for backfilling. Concrete slabs and walls of the various buildings and structures would be installed. Although it is anticipated that concrete slab foundations would be used, pile driving for structural foundation improvements may also be needed based on the results of geotechnical investigations.

Subsequent construction activities include construction of associated aboveground mechanical, structural, and electrical facilities. Support utilities (i.e., utility water, service air, storm drainage) for proposed facilities would also be installed. Following construction of structures, approximately 200,000 square feet of asphalt paving surrounding the new facilities would be installed.

Primary Effluent Pipeline and Utility Tunnel Construction

The primary effluent pipeline and utility tunnel would be constructed by open trench excavation, (also known as "cut and cover") technique, and trenchless tunneling. Installation of a 60-inch diameter pipeline would require excavating a trench approximately 10 feet wide by up to 12 feet deep. California Division of Occupational Safety and Health standards require either shoring for trenches that are more than 5 feet deep to prevent the surrounding soil from collapsing or sloping the excavation walls. Shoring would be accomplished using methods such as speed shoring (plywood siding with a cross-brace system), prefabricated trench boxes along the inside of the trench, or drilled soldier piles with lagging. Along the east-west oriented portion of the PE pipeline within the main plant, sheet pile walls may be used to stabilize the sloping soil along the northern boundary of the main plant site; and tunneling would be used to avoid electrical utilities. A sheet pile wall is a row of interlocking, vertical pile segments (such as I-beams) driven to form an essentially straight wall that acts as a retaining wall, sustaining a difference in soil surface elevation on either side of the wall. Contractors would tunnel the PE pipeline under electrical utilities in the vicinity of the existing power generation facility.

Excavation and Backfilling

Soils excavated for facility construction would primarily be the clean fill material imported during site preparation. Some native clay material may be excavated as well during construction of the headworks. Excavated materials would be stockpiled onsite and reused to the extent possible for construction. Material not reused onsite would be hauled to an offsite location for reuse or disposal.

Demolition and Site Restoration

Following construction of the proposed facilities, miscellaneous yard structures and piping would be demolished and removed from the site. Demolition would require initial shoring around existing structures and foundations, excavation, and removal of structures. Excavated areas would be backfilled to existing grade and asphalt paved. Demolition and site restoration would require the off-hauling of construction debris and concrete for reuse or disposal. The project would dispose of all demolition debris in accordance with all applicable state and local rules and regulations, including the recycling of construction debris as feasible. Table 2 summarizes the excavation and backfilling volumes and truck trips needed for the project. Minimal backfill material is anticipated. Areas would be graded and paved. Landscaping and irrigation would be installed along the WPCP fenceline in front of the new facilities on Carl Road.

Dewatering

All waters encountered or used within the main plant area would be managed and discharged to the WPCP storm drainage system, which is routed to the headworks for treatment. During excavation for primary treatment facilities, pipeline trenches, and pits, any groundwater or stormwater that accumulates within the excavated areas would be pumped out to the headworks. Likewise, water used for dust control, wash water, and other construction water would require containment, handling, and treatment. Temporary dewatering of the southeast channel would be achieved by installing a bypass pumping system that would pump storm drainage flows that enter

the Project site at the far southwestern edge of the southeast channel to the discharge pipes from the storm water pump station located at the north/northeast end of the channel.

Construction Water Needs

An estimated 230,000 gallons of utility water per month would be used for construction water needs, such as dust control. The utility water would be disinfected, tertiary treated effluent produced onsite at the WPCP.

Construction Equipment

The following construction equipment would be used:

- Excavator
- Grader
- Haul trucks
- Dozer/Loader
- Pile Drivers
- Roller
- Paving equipment
- Concrete Truck
- Water Truck
- Cranes

Appendix A presents the construction equipment use assumptions.

Construction Access and Staging

Construction activities would occur primarily within the main plant. Staging areas for short-term storage of heavy equipment, facility components, piping and other materials, as well as parking for project construction workers would be provided within the vacant areas on the eastern side of the main plant, following removal of the sludge drying beds and backfilling.

Construction Hours, Duration and Workforce

Construction activities are expected to occur primarily from Monday through Friday, 7:00 a.m. to 6:00 p.m. Some work outside of these hours could be required (e.g., for connecting new facilities into existing processes). The duration and estimated number of construction workers for each phase of construction would vary, as shown on **Table 3**.

TABLE 3
ESTIMATED CONSTRUCTION WORKFORCE AND DURATION

Activity	Number of Construction Workers	Estimated Duration (months)
Site Preparation	23	9
Facility Construction	38	33
Demolition and Site Restoration	24	9
Averages Over Construction Duration	28	51

2.5 Operating Characteristics

The proposed facilities would operate in a similar fashion as the existing facilities. No new staff would be needed to operate the new facility.

Primary power for the proposed facilities would be supplied by PG&E through the proposed switchgear. Currently many systems at the plant are powered by the onsite power generation facility, a cogeneration facility that relies on digester gas and landfill gas, supplemented by natural gas from PG&E only as needed. Implementation of the proposed improvements to the Headworks (replacing the influent pump station engines with electric-driven motors and removing the grinders from service) would result in a decrease in the amount of natural gas imported from PG&E for the existing power generation facility. This is because the digester gas currently used by the influent pump engines would instead be available for use at the power generation facility.

In addition, implementation of the grit screening facilities would reduce energy consumption relative to the current process for removing grit because the current process uses grit aeration blowers while the replacement facility would use stacked tray grit separation, which does not require any external power source. The aeration blowers are currently driven by the influent pump engines.

2.6 Uses of the Mitigated Negative Declaration

Required Actions and Approvals

The information contained in this IS/MND will be used by the City of Sunnyvale (the CEQA lead agency) as it considers whether to implement the Primary Treatment Facility project. In addition to the City, various governmental agencies may use this IS/MND in reviewing, approving and/or permitting various components of the project. **Table 4** identifies the actions and approvals that may be required in the future by agencies with discretionary authority over specific aspects of the proposed project.

TABLE 4
POTENTIAL REVIEW AND APPROVAL ACTIONS BY OTHER AGENCIES

Agency	Review and Approval
U.S. Army Corps of Engineers	• Permit for dredging and filling of waters of the United States and wetlands under Section 404 of the Clean Water Act
California Department of Fish and Wildlife	• Review biological analysis • Streambed Alteration Agreement for any work within the bed and banks of creeks
Regional Water Quality Control Board	• Section 401 Clean Water Act Certification for Corps Permit • National Pollution Discharge Elimination System Permit
Bay Conservation and Development Commission	• Coastal Zone Act Development Permit • California Coastal Act Consistency Determination
Bay Area Air Quality Management District	• Authority to Construct/Permit to Operate

References

Bay Area Air Quality Management District, 2013. Final Major Facility Review Permit Issued to City of Sunnyvale Water Pollution Control Facility #A0733. May 22.

Brown and Caldwell, 2009a. *Technical Memorandum: Condition Assessment and Unit Process Performance Review*. November 19.

Brown and Caldwell, 2009b. *Sunnyvale Strategic Infrastructure Plan Technical Memorandum: Influent Flows and Loads*. April 7, 2009.

Brown and Caldwell, 2008. *Technical Memorandum: Regulatory Framework*. July 3.

Carollo, in association with HDR, 2013. *City of Sunnyvale Master Plan and Primary Treatment Design Technical Memorandum: Hydrology Report: Master Plan*. Final Draft. November, 2013.

City of Sunnyvale, nd. City of Sunnyvale Water Pollution Control Plant [brochure]. Available online at: http://sunnyvale.ca.gov/Portals/0/Sunnyvale/DPW/WPCP/Plant%20Brochure.pdf.

Santa Clara Valley Water District, 2013. *Sunnyvale East and West Channels Flood Protection Project Draft Environmental Impact Report*, prepared by Horizon Water and Environment, LLC., October 2013.

3. Environmental Factors Potentially Affected and City's Mitigation Determination

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology, Soils and Seismicity
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology and Water Quality
☐ Land Use and Land Use Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☐ Recreation
☒ Transportation and Traffic	☐ Utilities and Service Systems	☒ Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

Signature

11·7·14

Date

Craig Mobeck
Printed Name

City of Sunnyvale
For

4. Environmental Checklist

This IS examines the project to identify potential effects on the environment. For each item on the IS checklist, the evaluation has considered the impacts of the project both individually and cumulatively. As needed, mitigation measures are included to reduce any significant impacts identified.

Approach to Cumulative Impact Analysis

Cumulative impacts are discussed at the end of each environmental topic impact discussion. The evaluation of cumulative impacts considers whether the proposed project could have impacts that are individually limited, but cumulatively considerable. Two approaches to a cumulative impact analysis are provided in CEQA Guidelines Section 15130(b)(1): (1) the analysis can be based on a list of past, present, and reasonably foreseeable probable future projects producing closely related impacts that could combine with those of a project, and (2) a summary of projections contained in a general plan or related planning document can be used to determine cumulative impacts. The following factors were used to determine an appropriate list of individual projects to be considered in this cumulative analysis:

- **Similar Environmental Impacts—**A relevant project contributes to effects on resources that are also affected by the project. A relevant future project is defined as one that is "reasonably foreseeable," such as a project for which an application has been filed with the approving agency or whose funding has been approved.
- **Geographic Scope and Location—**A relevant project is one within the geographic area where effects could combine. The geographic scope varies on a resource-by-resource basis. For example, the geographic scope for evaluating cumulative effects on air quality consists of the affected air basin.
- **Timing and Duration of Implementation—**Effects associated with activities for a relevant project (e.g., short-term construction or long-term operations) would likely coincide with the related effects of the project.

Table 5 lists the plans and projects in the project vicinity considered in the cumulative impact analysis, based on the above-referenced factors.

TABLE 5
PROJECTS CONSIDERED IN THE CUMULATIVE ANALYSIS

Jurisdiction	Project Title	Project Summary	Estimated Construction Schedule	Project Location and Distance from Project Site
City of Sunnyvale	Sunnyvale WPCP Oxidation Pond Maintenance Project	The project uses a floating hydraulic suction dredge on the oxidation ponds to remove accumulated biosolids from the ponds' bottoms. The project is currently underway, with minimal impact.	Present through 2016.	Oxidation ponds are part of the WPCP, north of the main plant.
City of Sunnyvale	Ongoing WPCP improvements	Reconstruction of two of the four anaerobic digesters; removal and dewatering of sediment from the oxidation ponds and digesters; and change from gaseous chlorine to hypochlorite for disinfection.	Present through 2016.	At the WPCP
Santa Clara Valley Water District (SCVWD)	Sunnyvale East and West Channels Flood Protection Project (Sunnyvale East and West Channels project)	Construction along the East and West channels to protect Sunnyvale from 100-year riverine flooding and to improve water quality. Includes floodwalls, levee and maintenance road improvements, bridge/culvert modifications, sediment removal, and stabilization of stream bank sections. Components near the WPCP include construction of inboard and outboard floodwalls between the main plant and Moffett Channel, inboard floodwall between Moffett Channel and Cargill Channel, and levee improvements along the West Channel between the landfills.	Construction planned during summers of 2015 and 2016, between May 1st and November 1st.	The West Channel borders the western side of the main plant; the East Channel borders the eastern edge of the Sunnyvale landfill.
City of Sunnyvale and SCVWD	City of Sunnyvale Joint Use Agreements with the Santa Clara Valley Water District	SCVWD and Sunnyvale may enter into a Joint Use Agreement (JUA) to provide public access to SCVWD's maintenance roads along the Sunnyvale Channels for recreational use. If a JUA is established, SCVWD WILL pave several stretches of maintenance roads.	Concurrent with the Primary Treatment Facility project.	Along East Channel from the John W. Christian Greenbelt to Tasman Drive and from Moffett Park Drive to Caribbean Drive; and along West Channel from N. Mathilda Avenue to Caribbean Drive. Nearest site is about 0.1 mile from the WPCP.
City of Sunnyvale	549 Baltic Way NetApp Expansion	This project would redevelop two parcels, known as Site 3, within the Moffett Park industrial area with two 5- story office buildings as part of the expansion of the NetApp campus.	Project approved but no building permit issued yet.	Approximately 0.5 mile southeast of WPCP
City of Sunnyvale	Moffett Place Planning Project	Proposed development of an approximately 55 acre office complex. A Specific Plan Amendment to the Moffett Park Specific Plan to change zoning and allowable floor area ratio.	Timing uncertain; duration approximately 16 to 64 months from construction start.	Approximately 1 mile southwest of the Project, near the intersection of Moffett Park Drive and N. Mathilda Avenue.
City of Sunnyvale	City of Sunnyvale Sanitary Sewer Collection System Master Plan	Master plan for Sunnyvale's wastewater collection system (sewer and stormwater). The plan identifies projects needed to replace aging infrastructure and increase capacity to serve in-fill development.	None known at this time.	Sunnyvale

SOURCES: City of Sunnyvale n.d., Sunnyvale Water Pollution Control Plant Oxidation Pond Maintenance Project FAQs; SCVWD,2013, Draft Environmental Impact Report, Sunnyvale East and West Channels Flood Protection Project; City of Sunnyvale, 2014, August 2014 Development Update.

4.1 Aesthetics

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
1.	**AESTHETICS — Would the project:**				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Discussion

a-c) **Less than Significant.** The WPCP main plant is located on Borregas Avenue and bounded by Carl Road on the south within a commercial/industrial area adjacent to San Francisco Bay. The nearest through road, Caribbean Drive, is located about 500 feet to the south. None of these roadways have been designated or are considered eligible to be state scenic highways, nor is the project site visible from a state scenic highway (Caltrans, 2014).

The Sunnyvale Materials Recovery and Transfer Station (SMaRT Station), a recycling center and waste disposal facility, occupies the adjacent property to the east and is also accessed via Carl Road. The former landfill, to the east and south of the site, blocks views of the WPCP from Caribbean Drive and points south. Warehouse- and office-type buildings occupy the areas along and south of Caribbean Drive. Adjacent to the north of the main plant, the San Francisco Bay Trail and jogging paths border the wetlands and provide views north toward San Francisco Bay.

The proposed facilities within the main plant would not affect a scenic vista or substantially alter the existing industrial visual character of the main plant and its surroundings. The main structures – the screening facility, screenings and grit handling building, grit basins, and primary sedimentation tanks – would be situated on the southeastern portion of the main plant, adjacent to Carl Road (see Figure 5). The tallest structure (the grit and screenings handling building, see Figure 5 in Section 2) would extend approximately 20 feet above grade. Landscaping planted along the fenceline would partially screen views of these replaced structures from Carl Road. These facilities would not be visible to motorists on nearby Caribbean Drive due to the intervening landfill topography. The visual character of the proposed facility would be similar to the existing WPCP facilities. The main above-ground structures would be at least 300 feet from the nearest trail, further diminishing public views of these structures. The view of the main plant from the San Francisco Bay Trail would ultimately be blocked by

construction of a flood control wall proposed as part of the Sunnyvale East and West Channels project, assuming that project is approved and implemented.

Project construction would introduce views of construction vehicles and equipment which could have temporary adverse impacts on the visual character of the nearby trails and open space areas; however, this is not considered significant in the context of the existing visual character of the site. For these reasons, the project would not adversely affect views, nor would the project substantially degrade the existing visual character of the site and its surroundings. This impact would be less than significant.

d) **Less than Significant.** Currently lights on poles (similar to streetlights) are operated at the site at night to ensure safe access to facilities, as the plant is operational 24 hours per day. Similar lighting would be installed on or around the new primary facilities on the main plant site to afford security cameras adequate lighting for 24 hour surveillance of the new facilities. Existing structures within the main plant fence and landscaping buffer would reduce potential light and glare on nearby areas. There are no nearby residents that would be affected by proposed lighting. The potential impact of light and glare would be less than significant.

Cumulative Impacts

The geographic scope of cumulative aesthetics impacts includes the viewsheds from public roadways, trails, and open space areas that could be affected by the project. Impacts on viewsheds that could occur during construction through operation and maintenance are considered.

Other projects that would occur concurrently with the proposed project in the same viewshed include the Sunnyvale East and West Channels project, the Sunnyvale WPCP Oxidation Pond Maintenance project, and ongoing maintenance activities at the main plant site. As noted in the Aesthetics impact analysis, the site would be visible only to users of surrounding trails, as it is topographically separate from surrounding roads and communities. Construction would temporarily affect views from these trails, due to the presence and operation of heavy machinery; however, these impacts would be temporary and would be less than significant, and the project is not expected to contribute to significant cumulative visual impacts.

References

California Department of Transportation (Caltrans), California Scenic Highway Mapping System: Santa Clara County, http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm, accessed June 11, 2014.

4.2 Agricultural and Forest Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
2. AGRICULTURAL AND FOREST RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

a-b) **No Impact.** The project site is not designated by either the General Plan or the Zoning Ordinance as agricultural (Sunnyvale, 2011), and agriculture is not currently practiced at the project site. It is not designated as important farmland by the state (DOC, 2011). Thus, no significant agricultural resources or operations would be affected as a result of the proposed project.

c-d) **No Impact.** The project site is not zoned or designated for forestry or timberland uses (Sunnyvale, 2011), and is shown as urban land on land cover and use maps compiled by the California Department of Forestry and Fire Protection (California Department of Forestry and Fire Protection, 2006). The site is currently used for Sunnyvale WPCP operations. Therefore, the project would not result in the loss of forest land or conversion of forest land to non-forest use.

e) **No Impact.** The project would increase the size of the WPCP's primary treatment facility; however, expansion of this component of the wastewater infrastructure alone would not increase the wastewater treatment capacity of the WPCP. The Master Plan the City is currently preparing will provide a long-term vision for the renovation of the

WPCP, to meet all regulatory and permit requirements, and to ensure reliable, cost-effective wastewater treatment services during the planning period. The Master Plan Environmental Impact Report (EIR) will address the potential for WPCP replacements, as a whole, to induce population growth in the service area, and will evaluate the impacts of population growth on conversion of agricultural or forest land to other uses.

Cumulative Impacts

Because the project would have no impact on agricultural and forest resources, it would not contribute to any cumulative impacts on these resources.

References

California Department of Conservation (DOC), 2011. Important Farmland of Santa Clara County (Map). Division of Land Resource Protection. June.

California Department of Forestry and Fire Protection, 2006.

City of Sunnyvale, 2011. Sunnyvale General Plan, Land Use and Transportation. Consolidated in July 2011.

4.3 Air Quality

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
3.	**AIR QUALITY —** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

The Bay Area Air Quality Management District (BAAQMD) *CEQA Air Quality Guidelines* were adopted in 2010 and amended in 2011 to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In 2012, the Alameda County Superior Court ruled that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD *CEQA Air Quality Guidelines*. In August 2013, the First District Court of Appeal reversed the trial court's judgment and upheld the BAAQMD's *CEQA Guidelines*. However, as of September 2014, an appeal is pending at the California Supreme Court. Although reliance on the 2011 thresholds is no longer required, local agencies still have a duty to evaluate impacts related to air quality emissions. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence. Accordingly, the City of Sunnyvale is using the BAAQMD's 2011 thresholds to evaluate project impacts in order to protectively evaluate the potential effects of the project on air quality. The City finds that, despite the court ruling, the science and reasoning contained in the BAAQMD 2011 *CEQA Air Quality Guidelines* provide the latest state-of-the-art guidance available. For that reason, substantial evidence supports continued use of the BAAQMD 2011 *CEQA Air Quality Guidelines*.

a) **Less than Significant with Mitigation.** The project site is within the San Francisco Bay Area Air Basin (Bay Area), which is currently designated as a nonattainment area for state and national ozone standards, state particulate matter (PM_{10} and $PM_{2.5}$) standards, and federal $PM_{2.5}$ (24-hour) standard. The BAAQMD's 2010 Clean Air Plan (2010 CAP) is the applicable air quality plan that has been prepared to address ozone nonattainment issues (BAAQMD, 2010). The 2010 CAP is an update to the BAAQMD's 2005 Ozone Strategy to comply with State air quality planning requirements. The 2010 CAP also serves as a multi-pollutant air quality plan to protect public health and the climate. The 2010 CAP control strategies include revised, updated, and new measures in the three traditional control measure categories: stationary source measures, mobile source measures, and transportation control measures. In addition, the 2010 CAP identifies two new categories of control measures, including land use and local impact measures and energy and climate measures.

The BAAQMD Guidelines recommends that a project's consistency with the current air quality plan be evaluated using the following three criteria:

a. The project supports the goals of the air quality plan

b. The project includes applicable control measures from the air quality plan, and

c. The project does not disrupt or hinder implementation of any control measures from the air quality plan.

If it can be concluded with substantial evidence that the project would be consistent with the above three criteria, then the BAAQMD would consider the project to be consistent with the applicable air quality plan prepared for the Bay Area.

The primary goals of the 2010 CAP are to attain air quality standards, reduce population exposure, and protect public health in the Bay Area, and to reduce greenhouse gas emissions and protect the climate. The BAAQMD-recommended measure for determining if a project supports the goals in the current air quality plan is consistency with BAAQMD thresholds of significance. If a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation measures, the project would be considered to be consistent with the goals of the 2010 CAP. As indicated in the following discussion with regard to air quality impact questions b) and c), the project would result in less than significant construction emissions with implementation of **Mitigation Measure AIR-1**, and would not result in long-term adverse air quality impacts. Therefore, the project would be considered to support the primary goals of the 2010 CAP.

The 2010 CAP contains 55 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the 2010 CAP. The 2010 CAP does not contain any measures specific to water pollution control plants and therefore, no inconsistency with the 2010 CAP control measures has been identified. With no specific control measures from the

2010 CAP applicable to water pollution control plants, the proposed project would not be considered to hinder implementation of 2010 CAP control measures.

In summary, the project with implementation of Mitigation Measure AIR-1 (see discussion b, below) would be consistent with all three criteria listed above to evaluate consistency with the 2010 CAP, and therefore would not conflict with or obstruct implementation of the 2010 CAP. This is a less-than-significant impact with implementation of mitigation.

Mitigation Measure: Implement Mitigation Measure AIR-1.

b) **Less than Significant with Mitigation.**

***Construction*.** The Bay Area experiences occasional violations of ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) standards. Thus, during the construction phase of any given project, basin-wide violations can occur. Site preparation, demolition and construction activities would involve use of equipment that would emit exhaust emissions containing ozone precursors (reactive organic gases or ROG, and nitrogen oxides, or NO_x). Onsite and offsite vehicle activity associated with material transport and construction worker commute would also generate emissions. Emission levels for these activities would vary depending on the number and types of equipment used, duration of use, operation schedules, and the number of construction workers. Emissions of ROG and NO_x from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during construction of the project.

Air pollutant emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ that would be generated by off-road construction equipment (e.g., excavators, graders, loaders) were estimated using an air emissions model and a variety of regulatory emission factors. CARB's Offroad emissions inventory database model was used to develop specific construction equipment ROG, NO_X, and PM_{10} emission factors for the Bay Area based on the estimated year that construction activities are expected to commence (2015). The Offroad database provides data for only NO_X, particulate matter, and total hydrocarbons, so factors identified by CARB were applied to convert total hydrocarbon emissions rates to ROG emissions rates (CARB, 2014). PM_{10} and $PM_{2.5}$ construction equipment exhaust emission factors were calculated by multiplying the particulate matter emission factors by the mass fractions of PM_{10} and $PM_{2.5}$ emissions in diesel exhaust, as provided by South Coast Air Quality Management District (SCAQMD)'s *Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds* (SCAQMD, 2006). **Table 6** shows emissions estimated for construction of the project. As shown in the table, regional exhaust emissions would not exceed the BAAQMD average daily or maximum annual significance thresholds for ROG, NO_x, PM_{10}, or $PM_{2.5}$ during construction. **Appendix A** includes additional assumptions used in these calculations such as construction schedule and phasing, construction equipment used, and their activity levels.

TABLE 6
AVERAGE DAILY CONSTRUCTION-RELATED AIR POLLUTANT EMISSIONS (pounds/day)

Source	ROG	NO_x	Exhaust PM_{10}*	Exhaust $PM_{2.5}$*
Construction Equipment and material haul trips	3.3	35.7	1.5	1.6
Construction worker commute trips	1.1	0.6	0.2	0.2
Total Project Emissions	4.4	37.0	1.7	1.6
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

* BAAQMD's proposed construction-related significance thresholds for PM_{10} and $PM_{2.5}$ apply to exhaust emissions only and not to fugitive dust. See Appendix A for the detailed calculations and assumptions associated with the emissions estimates.

The City's approach to analysis of construction dust impacts is to emphasize implementation of effective and comprehensive control measures, as recommended by BAAQMD. Without these measures, the construction-related dust impact would generally be considered significant. Although project construction exhaust emissions were found to be less than the applicable significance thresholds, implementation of **Mitigation Measure AIR-1** is required to ensure that all construction-related emissions, including fugitive dust, would result in less-than-significant impacts.

***Operations*.** In regards to operations, the proposed project would result in a negligible change in vehicle trips made to and from the project site. The number of employees at the site would not change and employee trips to the site would thus remain the same. One to two additional truck trips per week would be needed for the proposed facilities (to deliver CEPT chemicals and diesel for the standby generator). Biosolids would continue to be hauled away from the site by one to two truck trips per day. Emissions that would result from this level of vehicular activity would be less than one pound of ROG, NO_x, PM_{10}, and $PM_{2.5}$ per day.

One standby diesel generator (up to 2,500 kW) and diesel fuel storage tanks would be installed in an enclosure outside the switchgear building with provision for another standby generator to be installed to accommodate future expansion at the treatment facility. The six variable speed pumps at the influent pump station would be powered by electricity obtained from the Pacific Gas and Electric Company electrical grid and would not generate any direct emissions at the site. The standby generator would be subject to BAAQMD Regulation 2 and require a permit to operate. Diesel fuel storage tanks would be subject to the requirements of BAAQMD Regulation 8, Rule 5: Storage and Organic Liquids.

Criteria pollutant emissions associated with testing of the standby generator were estimated using emission factors from equipment specification sheets from Caterpillar and assuming a maximum of 50 hours of testing per year. Annual emissions of ROG, PM_{10} and $PM_{2.5}$ would be less than 0.1 tons per year and annual emissions of NO_x would be 0.7 tons per year. These emissions would be well below the BAAQMD annual significance thresholds of 10 tons per year for ROG, NO_X and $PM_{2.5}$ and 15 tons per year for PM_{10}.

Therefore it can be concluded that the total operational emissions from the project would result in a less-than-significant impact.

Mitigation Measure AIR-1: During active construction, the City shall require construction contractors to implement all the BAAQMD's Basic Construction Mitigation Measures, listed below:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

c) **Less than Significant with Mitigation.** According to the BAAQMD, no single project would by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD CEQA Air Quality Guidelines, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality (BAAQMD, 2011a). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts. As discussed for criteria "b" above, the project would result in less-than-significant impacts associated with construction emissions with mitigation incorporated, and less-than-significant impacts associated with operational emissions. Therefore, the project

would not result in a cumulatively considerable net increase of any of the criteria pollutants for which the Bay Area is non-attainment.

Mitigation Measure: Implement Mitigation Measure AIR-1.

d) **Less than Significant.** BAAQMD defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, colleges and universities, daycares, hospitals, and senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees (BAAQMD, 2011b). Sensitive receptors closest to the project site are the residences located immediately south of State Route 237 and are at least 0.6 mile (3,500 feet) away from the project site boundaries.

Construction of the project would result in short-term diesel exhaust emissions including diesel particulate matter (DPM) from the use of off-road diesel equipment required for construction activities. DPM is a complex mixture of chemicals and particulate matter that has been identified by the State as a toxic air contaminant (TAC) with potential cancer and chronic non-cancer effects. Exposure of sensitive receptors to these emissions is the primary factor used to determine health risk. Exposure is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. A longer exposure period would result in a higher exposure level. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of the proposed construction activities (approximately 2.5 years) would only constitute a small percentage of the total 70-year exposure period. Though the duration of construction is over the OEHHA recommended minimum exposure duration of two years to be assumed for health risk assessment of short-term projects, due to the distance of more than 3,000 feet that would separate the source from the receptors, construction activities are not anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards. Further, implementation of **Mitigation Measure AIR-1** (BAAQMD's Basic Construction Mitigation Measures) would also reduce potential DPM emissions and further reduce this less-than-significant impact.

Operation of the new headworks and primary treatment facilities are also not expected to increase emissions significantly over existing levels. Emissions from employee vehicle trips is expected to remain unchanged as the number of employees at the site will not change. There would be an increase of 1-2 truck trips per day to deliver supplies and haul away biosolids from the site. Given the low amount of daily haul truck trips, no substantial health risks would be introduced to the offsite sensitive receptors in the project vicinity.

While combustion of natural gas and digester gas use at the project site is expected to remain the same, there will be an increase in diesel fuel usage at the site due to the installation of the emergency standby generator in the switchgear building. The generator would be subject to the permitting requirements of BAAQMD Regulation 2 and as part of the permit application a health risk assessment will be required to ensure that the health risk associated with emissions from the testing and operation of the standby generator to nearby sensitive receptors would be less than significant. In addition, as the generator would be located within the treatment facility's main operational area and more than 3,000 feet from nearby sensitive receptors, no substantial health risks would be anticipated. Therefore the overall operational impact would be less than significant.

e) **Less than Significant.** Wastewater treatment facilities are a common source of odor and nuisance impacts to nearby areas. Odors from wastewater treatment facilities are typically associated with biological activity that produces gaseous inorganic compounds. Odorous compounds produced from plant operations include hydrogen sulfide, organic sulfur compounds and ammonia, and other nitrogen-containing compounds. The headworks and primary treatment facilities in a wastewater treatment plant typically have a high potential for odor impacts as the wastewater going through these facilities is still in the early stages of treatment.

A review of BAAQMD odor complaint data compiled for the Sunnyvale Water Pollution Control Plant indicates that there has been just one confirmed complaint associated with odors emanating from the WPCP during the past 5 years from January 1, 2009 to August 26, 2014; there have been no confirmed odor complaints during the 3-year period from August 2011 through August 2014. The BAAQMD considers an existing odor source to have a substantial number of odor complaints and an associated significant odor impact if the complaint history for the facility includes five or more confirmed complaints per year averaged over a 3-year period. As noted above, with no confirmed complaints over the most recent 3-year period, the odor impacts associated with the existing conditions at the WPCP are not considered to be substantially adverse.

As part of the project, the City proposes to construct new headworks facilities, which would include a new screening facility to replace the function of the existing grinders, a new influent pump station, and a screening facility with a grit/screenings handling building. In general, all the proposed facilities would enclose operations in the headworks area within concrete structures with a provision for adequate ventilation and odor control mechanisms to reduce the odor from the ventilated air before releasing it to the atmosphere.

The new screening facility would include covered channels in which the bar screens would be installed and the ventilated air would be sent to an odor scrubber. Similarly, the wet well of the proposed pump station would be covered and ventilated, and the ventilated air would be sent to an odor scrubber prior to its release to the atmosphere. The pump station itself would be covered and ventilated, and the ventilated air would be sent to the atmosphere. The screening facility and the grit/screenings handling building would

also be enclosed within a concrete block structure and odor scrubbers would be installed in parts of the building.

The proposed primary sedimentation tanks could potentially generate odor impacts; however, the project would also include an odor control system consisting of covers to contain odorous air emissions, an exhaust fan system for capturing fugitive emissions, and a bioscrubber to treat odors. A bioscrubber is a biological treatment process on a synthetic medium contained within a vertical tower.

Currently, the biosolids from the digesters are dewatered in open air beds located where the new headworks and primary treatment facilities are proposed. The project would switch the process to mechanized dewatering, which would accelerate the process, thereby reducing the intensity and duration of odor from dewatering.

Therefore, by design, the proposed new primary treatment facility would reduce odor emissions and would not create objectionable odors affecting a substantial number of people. The impact would be less than significant.

Cumulative Impacts

Based on BAAQMD guidance, a project's contribution to cumulative air quality impacts would be considered significant if the project's individual impact is significant or if it conflicts with the applicable clean air plan. As discussed under checklist item b) of the air quality section, the project would not result in any significant air quality impacts either during construction operation as project emissions are estimated to be well below the BAAQMD significance thresholds. As discussed under a), the project would also be compliant with the 2010 CAP. Therefore, its contribution to the cumulative air quality impact in the Bay Area would not be cumulatively considerable and the associated impact would be less than significant.

References

Bay Area Air Quality Management District (BAAQMD), 2010. Bay Area 2010 Clean Air Plan, adopted September 15, 2010. Available at http://www.baaqmd.gov.

Bay Area Air Quality Management District (BAAQMD), 2011a. CEQA Air Quality Guidelines, revised May 2011.

Bay Area Air Quality Management District (BAAQMD), 2011b. Recommended Methods for Screening and Modeling Local Risks and Hazards – Version 2.0, May 2011

California Air Resources Board (CARB), 2014. Factors for Converting THC Emissions Rates TOG/ROG. Accessed website ftp://ftp.arb.ca.gov/carbis/planning/sip/.../ section_4_part11.doc, May 7, 2014.

South Coast Air Quality Management District (SCAQMD), 2006. Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM (2.5) Significance Thresholds, October 2006.

4.4 Biological Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
4.	**BIOLOGICAL RESOURCES — Would the project:**				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

A biological site assessment was conducted for this evaluation (presented below) to determine whether any sensitive biological resources such as wetlands, streams, or habitats for special-status species are near the proposed project, and to determine whether project activities would result in potentially significant adverse biological impacts. Sensitive biological resources include the following:

1. Plants or animals that are listed as rare, threatened, or endangered or as species of special concern, pursuant to Federal or State law, and habitat essential to special-status species of plants or wildlife;
2. Natural communities indicated as rare or threatened by the California Natural Diversity Database (CNDDB) of the California Department of Fish and Wildlife (CDFW);
3. Wetlands and streams, and the riparian vegetation surrounding them, or natural vegetation designated as significant natural habitat; and
4. Natural communities and associated buffers protected pursuant to applicable plans, policies, and regulations.

The evaluation of potential impacts of the project on biological resources is based on the following field investigations and review of existing information: CNDDB (2014) data on special-status species and sensitive habitat occurrences in the vicinity of proposed project activities;

- A delineation of wetlands and other waters of the U.S./State of the project area conducted by H. T. Harvey & Associates (HTH) biologists in winter and spring 2014 (HTH 2014);
- A delineation of wetlands and other waters of the U.S./State conducted for the Sunnyvale East and West Channels project by HTH biologists (HTH 2013);
- Habitat assessments for special-status species related to the SCVWD *Sunnyvale East Channel and Sunnyvale West Channel Flood Protection Project* (SCVWD 2011) and other documents relevant to natural resources occurring in the project area (SCVWD 2010a, 2010b, 2010c);
- Information related to the SCVWD's Multi-year Stream Maintenance Program (SCVWD 2011);
- Surveys conducted by HTH for special-status species conducted in the project area and other portions of the South Bay (HTH 1990a, 1990b, 1991, 1997, 1999a, 1999b, 2007, 2010, 2012);
- Surveys conducted for burrowing owls (*Athene cunicularia*) in the project area (Chromczak 2014, EDAW 2008); and
- Site visits conducted by HTH biologists, and HTH biological experts' understanding of wildlife distribution in the vicinity of the project areas.

The geographic scope of the biological site assessment was limited to the areas that are within and adjacent to the main plant, hereafter referred to as the "project area". Areas beyond the project area, but in the general vicinity of the WPCP, include the Don Edwards San Francisco Bay National Wildlife Refuge to the north and east of Guadalupe Slough and west of Pond 1, and residential and commercial areas associated with the City of Sunnyvale to the south of the landfills.

Discussion

a) **Less Than Significant with Mitigation.** A number of plants and animals are considered "special-status species" because they are protected by State or federal laws such as the Federal Endangered Species Act (FESA) or the California Endangered Species Act, or because they have been listed as rare species by the CDFW or the California Native Plant Society (CNPS). Impacts to such species may be subject to regulation by resources agencies and may also be considered significant under CEQA, thereby requiring mitigation.

A list of 77 plants listed as special-status and potentially occurring in the project area was compiled using CNPS lists and CNDDB (2014) records, and reviewed for their potential to occur within the project area. Analysis of the documented habitat requirements and occurrence records associated with all of the species considered allowed us to reject 76 of

these species as not occurring within the project area. Table 1 of **Appendix B** presents a list of all species considered but rejected, and the reason for rejection. Similarly, all special-status animals potentially occurring in the project area were reviewed. Table 2 of Appendix B represents the legal status and potential for occurrence of special-status wildlife species known to occur or potentially occurring in the general vicinity of the project area. Although sensitive species habitat is very limited on the project site itself, habitat for a number of special-status species present in areas adjacent to the project site, and thus Table 2 of Appendix B addresses all special-status wildlife species potentially occurring in the vicinity.

The following is a discussion of the special-status species with potential to occur in the project area, the potential impacts to those species that may occur during project implementation, and any proposed mitigation measures to reduce impacts to less-than-significant levels.

Special-status Plants

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), included on CNPS List 1B.2, meaning that it is considered "fairly threatened in California", is the only special-status plant that could potentially occur in the project area based on site habitat conditions and this species' distribution. This plant occurs in weedy, periodically disturbed grassland areas nearby at Sunnyvale Baylands Park, and it is possible that the plant could occur in the weedy edges of the eastern portion of the main plant. However, the site provides generally poor habitat conditions for the species. The majority of the site is developed or heavily impacted by the movement of equipment during plant operations, with the exception of ruderal areas adjacent to the stormwater ditch that occurs along the periphery of the southeast corner of the main plant (i.e., the "southeastern channel"). These areas bordering the open water and freshwater marsh habitats associated with the channel are unlikely to support Congdon's tarplant because they are dominated by shrubs (e.g., coyote brush [*Baccharis pilularis*]) and dense ruderal vegetation (e.g., sweet fennel [*Foeniculum vulgare*], black mustard [*Brassica nigra*]), and there is a lack of frequently disturbed ruderal areas where the species is likely to occur. In contrast, a population of as many as 8000 individuals has been documented in Sunnyvale Baylands Park (approximately one mile to the southeast of the main plant) in ruderal grasslands and swales that receive frequent disturbance (CNDDB 2014). During recent site visits to the main plant on 28 May and 6 August 2014, Congdon's tarplant was not observed by HTH plant ecologists. The site visits occurred during the flowering period for Congdon's tarplant, and the plant would have been conspicuous if present. Therefore, Congdon's tarplant is considered absent from the site during the 2014 growing season, and we expect no impacts to this species.

Impacts to Burrowing Owls

The burrowing owl (*Athene cunicularia*), a California Species of Special Concern, is known to occur during the non-breeding season on closed landfill areas southwest of the current household hazardous waste drop-off site (shown on Figure 2), west of the Sunnyvale West Channel, and just west of the Sunnyvale East Channel (Chromczak

2014). No burrowing owls have been recorded since 1998 on the portion of the landfill immediately south/southeast of the household hazardous waste drop-off site or in a large area immediately east of Borregas Avenue. Burrowing owls were formerly known to occur on berms around the eastern portion of the main plant area (Chromczak 2014), but they have not been recorded on the main plant in recent years.

If work were to occur in occupied burrowing owl habitat, individual burrowing owls (especially young or adults in burrows) may be killed or injured during construction activities from destruction of burrows by equipment. More likely, project activities occurring near active burrows may disturb owls to the point of abandoning their burrows, including active nests, eggs, and young. Because potentially suitable burrows for burrowing owls may be present in grassland or ruderal areas near the main plant, there is some potential for owls to occupy the site and to be impacted by the project. The loss of an individual or active nest, through direct impact or (more likely) abandonment, would represent a significant impact under CEQA because of the species' regional rarity and population declines. Therefore, to avoid impacting nesting owls, mitigation measures including preconstruction surveys, avoidance of breeding-season (1 February through 31 August) activities within buffers (up to 250 ft for burrowing owls), and eviction of individuals during the nonbreeding season are required to reduce impacts to a less-than significant level. The following mitigation measures will be incorporated into the project burrowing owls to reduce impact to less-than-significant levels:

Mitigation Measure BIO-1a: Pre-construction Surveys. The City would retain a qualified biologist, or require the contractor to retain a qualified biologist to conduct pre-construction surveys for burrowing owls in potential habitat in conformance with CDFW protocols, with the final survey occurring no more than 2 days prior to the start of any ground-disturbing activity such as clearing and grubbing, excavation, or grading, or any similar activity within 250 feet of suitable habitat that could disturb nesting owls. If no burrowing owls are located during these surveys, no additional action would be warranted. However, if burrowing owls are located on or immediately adjacent to impact areas the following mitigation measures would be implemented.

Mitigation Measure BIO-1b: Buffer Zones. If burrowing owls are present during the nonbreeding season (generally 1 September to 31 January), the City contractor would maintain a 150-foot buffer zone, within which no new project-related activity would be permissible, around the occupied burrow(s) if feasible, though a reduced buffer is acceptable during the non-breeding season as long as construction avoids direct impacts to the burrow(s) used by the owls. During the breeding season (generally 1 February to 31 August), a 250-foot buffer, within which no new project-related activity would be permissible, would be maintained between project activities and occupied burrows. Owls present at burrows on the site after 1 February would be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area would remain in effect until 31 August, or based upon monitoring evidence, until the young owls are foraging independently.

Mitigation Measure BIO-1c: Relocation. If ground-disturbing activities would directly impact occupied burrows, the qualified biologist will evict the owls

occupying burrows to be disturbed evicted during the non-nesting season. No burrowing owls will be evicted from burrows during the nesting season (1 February through 31 August) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season).

Impacts to Other Special-status Nesting Birds

The Alameda song sparrow (*Melospiza melodia pusillula*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), and loggerhead shrike (*Lanius ludovicianus*), all considered California Species of Special Concern, could potentially nest around the eastern edge of the main plant. A few pairs each of the Alameda song sparrow and San Francisco common yellowthroat may nest in freshwater marsh and adjacent ruderal vegetation around the eastern portion of the main plant, and one pair of loggerhead shrikes could potentially nest in trees and shrubs in the vicinity as well. The proposed project would fill a large portion of the southeastern channel and adjacent ruderal areas, and would remove trees and shrubs in the area. The elimination of this habitat would preclude Alameda song sparrows, San Francisco common yellowthroats, and loggerhead shrikes from nesting on the main plant after project implementation. The loss of habitat from this project would be considered less than significant under CEQA because the impacted habitat (and thus number of pairs) represents a very small proportion of that regionally available. During project implementation, nests with eggs or young may be lost during construction, including vegetation removal and fill of the southeastern channel. The loss of a small number of special-status birds that may occur in the channel would represent a less than significant impact under CEQA; however, a large number of more common nesting birds may also nest in vegetated areas and on existing structures and the loss of a large number of nesting birds would represent a potentially significant impact. Further, the project would need to take measures to comply with the federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., §703, Supp. I, 1989) and California Fish and Game Code (§§3503, 2513, and 3800), which protect active bird nests from destruction. Because the project will not be able to avoid work during the avian nesting season (1 February to 31 August), the following mitigation measures are required to reduce impacts on nesting birds to less-than-significant levels:

Mitigation Measure BIO-2a: Nesting Deterrence. Nesting deterrence can be implemented to minimize the potential for nesting birds to constrain project activities or to be impacted by those activities. The most effective nesting deterrence in non-developed portions of the main plant includes vegetation removal to remove nesting substrate. However, because removal of vegetation prior to the nesting season will not be feasible, removal of nest-starts (incomplete nests that do not yet contain eggs or young) by qualified biologists will be necessary. Such nest-start removal will begin early in the breeding season (e.g., February) and continue regularly until vegetation can be removed and construction commences. Some species, such as barn swallows (*Hirundo rustica*) or black phoebes (*Sayornis nigricans*), may establish nests on buildings or other structures. To deter birds from nesting on structures, netting or other deterrence devices may be installed to preclude birds from constructing nests. Such nesting deterrence should be implemented under the supervision of qualified biologists in order to prevent death

or injury as a result of improperly installed deterrence devices, and such devices will require regular maintenance to ensure that they are functioning properly.

Mitigation Measure BIO-2b: Pre-construction Surveys. Prior to commencement of new activities (i.e., activities that are not currently ongoing in any given area) during the breeding season, pre-construction surveys will be conducted by a qualified biologist no more than 7 days prior to the initiation of new disturbance in any given area. Pre-disturbance surveys should be used to ensure that no nests of species protected by the MBTA or California Fish and Game Code will be disturbed during project implementation. During this survey, the biologist will inspect all potential nesting habitats (e.g., trees, shrubs, buildings, and various substrates on the ground) in the project area for nests. Surveys will be conducted within search radii corresponding to disturbance-free buffer zones described below for raptors (300 feet) and non-raptors (100 feet), including in off-site areas adjacent to the project (where such areas are accessible).

Mitigation Measure BIO-2c: Buffer Zones. If an active nest is found, a qualified biologist will determine the extent of a disturbance-free buffer zone to be established around the nest until nesting has been completed. Disturbance-free buffer zones are typically 300 feet for raptors and 100 feet for non-raptors. Nests will be considered active until surveys conducted by a qualified ornithologist confirm nesting is complete. However, construction within 100 feet of these nests may proceed if, based on monitoring of the birds behavior, a qualified biologist determines that such activities are not likely to result in the abandonment of the nest. Per CDFW recommendations, monitoring should be conducted as follows:

- A qualified biologist should monitor activity at each nest for three days (8 hours of monitoring each day) prior to the onset of construction activities to develop a baseline of the normal behavior of the birds attending the nest. If the behavior observed at the nest is consistent on Days 1 and 2 of monitoring, Day 3 of monitoring may be skipped.
- A qualified biologist should monitor activity at each nest for 8 hours on the first day that construction occurs within the standard buffer (e.g., within 100 feet of a non-raptor nest). If the biologist determines that the birds' behavior is not adversely affected, Project activities may continue. The biologist should continue to monitor the nests for 1 hour/day on any day when construction activities occur within the standard buffer around an active nest.

If at any time the biologist determines that Project activities within the standard buffer is adversely affecting the behavior of the birds such that the nest is in jeopardy of failing, construction activities should retreat to honor the standard buffer until the nest is no longer active (i.e., the young have fledged).

Impact to Special-status Species in Adjacent Areas

There are several special-status species that could occur in the vicinity, but outside of the main plant, that could be affected by construction associated with the project, if those activities result in noise or vibration above existing conditions where those species occur. For instance, there are special-status fish species that could occur in Moffett Channel to

the north of the main plant area. The Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and the southern green sturgeon (*Acipenser medirostris*), both listed under FESA, could potentially occur in Guadalupe Slough or Moffett Channel. Because there is no spawning habitat in Moffett Channel, CCC steelhead are not expected to occur in the project area regularly, although small numbers of stray, individual steelhead associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of these channels. Green sturgeon are relatively rare in the South Bay but could forage infrequently, and in low numbers, within Moffett Channel. The State-threatened longfin smelt (*Spirinchus thaleichthys*) may also be present in Moffett Channel, most likely in the winter or spring when they are known to occur in the South Bay. California Ridgway's rails (*Rallus obsoletus obsoletus*), formerly the California clapper rail (*Rallus longirostris obsoletus*), may use tidal salt and brackish marsh habitat along Moffett Channel for foraging but are not expected to breed in habitats along the channel, or to forage very close to the main plant. Salt marsh harvest mice (*Reithrodontomys raviventris*) have been captured in Guadalupe Slough and they could occur in marshes along Moffett Channel, although similarly to the rail, habitat conditions are poor for harvest mice in Moffett Channel compared to the more saline marshes of Guadalupe Slough, and thus they are unlikely to occur very close to the main plant. The California black rail (*Laterallus jamaicensis coturniculus*) inhabits a variety of marsh types and has been detected in increasing numbers in the South Bay, and although not known to occur in Moffett Channel, the species could colonize marshes within the channel. Habitat conditions are of sufficiently poor quality in other areas adjacent to the main plant, such as the swale under the power line corridor immediately north of the main plant, that special-status species are unlikely to occur in those areas. Thus, Moffett Channel represents the closest habitat that special-status species are expected to occur, albeit infrequently and in low numbers.

During construction and operation, the project is expected to result in an increase in activity, mainly in the eastern portion of the site, and increased truck trips through the site when delivering materials, such as fill. However, project activities in the main plant are not expected to cause substantially greater noise and disturbance levels than existing (i.e., operational) conditions. These activities, including additional truck trips, would not affect special-status species within the project area, as any species present would be habituated to similar disturbance associated with existing conditions (e.g., frequent truck traffic). Activities with the most potential to result in noise or vibration above existing conditions would involve the installation of the 60-inch primary effluent line along the northern perimeter of the site (Figure 5). Although the excavation of a trench to install the pipe would not generate substantial noise or vibration beyond existing conditions, the installation of sheet piles to support trenching may generate loud, percussive noise and vibration that is detectable in adjacent areas, including Moffett Channel to the north. However, areas that are directly adjacent to the main plant, such as the swale north of the site, are unlikely to support special-status species. The portions of Moffett Channel that are closest to the main plant are least likely to support the special-status species described above, as that area includes the southernmost extent of the channel where habitat quality

is poorest for these species. This portion of the channel has only narrow, low-quality marsh habitat along the fringe of the channel that is unlikely to be used by special-status rails or salt marsh harvest mice. Further, Moffett Channel is separated from the proposed trenching area by approximately 100 feet of land mass that includes a levee with compacted roadway. This land mass between the pipeline and channel would likely mute percussive noise and vibration associated with sheet pile installation such that very little noise or vibration would be detectable in the channel, or likely even in areas closer to the site such as the swale to the north. Because few, if any, special-status species would occur in southern portions of Moffett Channel during sheet pile installation, and because the intervening land mass would mute noise and vibration from the project, the impact is considered less than significant. Although special-status species are not expected to occur in areas adjacent to the main plant, common nesting birds may occur in vegetated areas adjacent to the site, including in the swale to the north. It is expected that birds in the project area are already accustomed to moderate levels of ambient noise due to the existing human disturbance in and around the site. However, increasing noise levels during construction could potentially hinder mate attraction, disrupt reproductive success of breeding birds, and/or deter the general use of the area (including the project site and nearby off-site areas) by migratory birds. Although these areas are outside the main plant, implementation of mitigation measures for nesting birds described above, which require pre-construction surveys and establishment of disturbance-free buffers around active nests (300 feet for raptors, 100 feet for non-raptors), would be necessary to reduce impacts from project-related construction noise on nesting birds to a less-than-significant level.

b) **Less Than Significant.** The project would not result in a substantial adverse effect on riparian or other sensitive communities identified in local or regional plans, policies, regulations, or by the CDFW or U.S. Fish and Wildlife Service. The habitats that would be impacted by the proposed project include portions of the southeastern channel and adjacent ruderal areas that would be filled prior to the installation of primary sedimentation tanks and other infrastructure. Although a few scattered willows (*Salix* sp.) occur along the channel, the habitat is not considered riparian habitat. The uplands adjacent to the channel are composed of ruderal grassland habitat with mainly non-native, low-stature trees that do not provide the ecological functions and values typically associated with native riparian corridors along freshwater streams and other waterways. Such riparian areas are often used as movement corridors by wildlife as well as home-range habitat for numerous nesting and/or migrating birds. Because high-quality native riparian vegetation is absent from the southeast channel, the site is not expected to provide functions and values associated with native riparian habitats. Therefore, impacts to riparian or other sensitive communities are considered less than significant. Impacts to jurisdictional features associated with the channel are addressed below. **[Reviewers: Conclusions will be confirmed following CDFW review of permit application]**

c) **Less Than Significant with Mitigation.** A channel, referred to as the "southeastern channel" above, occurs in the southern and eastern part of the main plant. The channel emanates from a culvert on the south side of the main plant and flows east, then north, to

a pumping station. This channel receives runoff from surrounding areas. Based on the amount and depth of water it contains, it is likely perennially wet, and probably intercepts groundwater. A delineation of wetlands and other waters (shown in **Figure 6**) was conducted on the main plant and other WPCP properties in 2014 (HTH, 2014). Portions of the channel were delineated as wetlands and includes freshwater marsh habitats that are typically dominated by cattails (*Typha* spp.) and California bulrush (*Schoenoplectus californicus*), and includes other common species such as water cress (*Nasturtium officinale*) and floating water primrose (*Ludwigia peploides*). Verification of the delineation by the U. S. Army Corps of Engineers (USACE) is pending.

The southeastern channel is likely to be considered waters of the U.S. by the USACE, thus the placement of fill in the channel would require a Section 404 permit from the USACE. The boundaries of waters of the State are expected to be the same as the boundaries of waters of the U.S. Therefore, the San Francisco Bay Regional Water Quality Control Board is expected to take jurisdiction over the southeastern channel, and an application for 401 certification would also be required. Impacts to the channel would result in the loss of 0.25 acres (ac) of other waters and 0.02 ac of wetlands (Figure 6), for a total impact of 0.27 ac of jurisdictional habitats. Although the fill of these jurisdictional features represents a small regional loss of habitat, the loss of wetlands and other waters would be considered significant under CEQA without mitigation owing to the project's contribution to regional declines in wetland acreage. Therefore, the following mitigation measure is required to reduce impacts on protected wetlands to less-than-significant levels:

> **Mitigation Measure BIO-3a: Habitat Mitigation.** To offset impacts to wetlands and other waters, the City of Sunnyvale would mitigate for this loss, at a mitigation ratio of 1:1 on an acreage basis, by purchasing mitigation bank credits (totaling 0.3 ac) at the San Francisco Bay Wetland Mitigation Bank.

d) **Less Than Significant.** The project would not interfere substantially with movements of resident or migratory fish or wildlife. Because the majority of the project area is already developed, and the entire area is fenced, few wildlife move through the project area, and no regionally important movement areas (e.g., corridors) are present on the site.

e) **Less Than Significant with Mitigation.** The project could potentially conflict with the City's tree ordinance. The City of Sunnyvale requires a Tree Removal Permit from the Trees and Landscape Division to remove trees on public property that meet certain criteria. The tree ordinance defines protected trees as those with a single trunk that is 38 inches or more in circumference or any tree with multiple trunks with at least one trunk greater than 38 inches or with a cumulative circumference of 113 inches (as measured 4.5 feet from the ground). The ordinance does not differentiate between native and nonnative trees. There are nine trees in areas adjacent to the southeastern channel that meet these qualifications, including six bottlebrush trees (*Callistemon* sp.) and three Mexican fan palms (*Washingtonia robusta*). The tree ordinance typically applies to "street trees" that occur within right-of-way areas along roadways, and the ordinance's

SOURCE: H.T. Harvey and Associates

City of Sunnyvale Primary Treatment Facility . 120457

Figure 6

Potential Wetlands and Other Waters of the U.S.

application to public lands must be determined on a case-by-case basis after a permit application is submitted to the Trees and Landscape Division. Because this project is a City project, and because the trees in question are not associated with a public right-of-way, it is possible that no Tree Removal Permit or mitigation is necessary. However, if the City determines that mitigation is required, the project would be required to replace the trees at a 1:1 ratio, typically within 90 days from the day the trees are removed. **[City Reviewers: Please make this determination and incorporate information into your review comments]** If replacement cannot occur, an in-lieu fee would be required. Compliance with this tree ordinance would reduce impacts resulting from conflicts with local policies and ordinances to a less-than-significant level.

f) **No Impact.** The project site is not within the boundaries of the Santa Clara Valley Habitat Conservation Plan and Natural Community Conservation Plan study area (Santa Clara Valley Habitat Authority, 2012; California Department of Fish and Wildlife, 2014); therefore, the project would not conflict with any applicable habitat conservation plan or natural community conservation plan affecting the area.

Cumulative Impacts

The project, in conjunction with other ongoing or foreseeable projects, is not expected to result in cumulative impacts on biological resources. The proposed project would occur within the confines of the existing main plant area, which is already mostly developed, and with the exception of the filling of the southeastern channel, no impacts to sensitive or ecologically important habitats are expected to occur. The project would mitigate any impacts to wetlands and other waters, and to burrowing owls, and thus would not contribute to significant cumulative impacts to those resources. The project would result in the addition of vehicular traffic associated with delivering of materials, including fill, to the site but additional traffic is not expected to result in significant adverse effects to biological resources in the project area.

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4.5 Cultural Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
5.	**CULTURAL RESOURCES — Would the project:**				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

a) **No Impact.** A project would result in a significant impact if project activities caused a substantial adverse change in the significance of a historical resource, herein referring to historic-period architectural resources or the built environment, including buildings, structures, and objects, listed in or eligible for listing in the California Register of Historical Resources (CRHR) or a local register. A substantial adverse change includes the physical demolition, destruction, relocation, or alteration of the resource.

ESA completed a records search at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University on June 9, 2014 (File No. 13-1889). The records search included a review of previous surveys, studies, and site records for the project site and a surrounding half-mile-radius area. Records were also reviewed in the Historic Property Data File for Santa Clara County that contains information on sites of recognized historical significance including those evaluated for listing in the National Register of Historic Places (NRHP), the CRHR, the California Inventory of Historical Resources, California Historical Landmarks, and California Points of Historical Interest.

Three resources of the built environment are in the vicinity of the project site: the Sunnyvale Channels, the main plant of the WPCP, and the Alviso Salt Ponds Historic District.

Sunnyvale West and East Channels. The Sunnyvale West and East Channels have been previously evaluated for their historic significance and were determined not to be historical resources for the purposes of CEQA (SCVWD, 2013). No further consideration is necessary of the Sunnyvale Channels.

Donald M. Somers Water Pollution Control Plant. The WPCP was initially constructed in 1954; original facilities dating to that time may now be considered historical resources if other criteria apply such as a significant association with

historical events, people, or architectural styles or master architects/engineers, and if sufficient integrity remains to convey such associations. The Primary Building, Digesters #1 and #2, and Sedimentation Basins #1 to #6 date to 1954 and have largely retained their original appearance. Proposed activities would not involve exterior alterations to or demolition of these buildings or structures; however some of the interior features and equipment of the buildings may be removed or altered. The earliest construction at the WPCP consists of modern industrial facilities that were designed in more typical, rather than distinctive, characteristics of the Mid-Century Modern architectural style, and would not qualify for CRHR status. The main plant and the oxidation ponds do not appear to be eligible for listing under any of the associated criteria, including Criteria A for important events, Criteria B for association with an important person, or Criteria C for significant architecture. Additionally, the facility as a whole has been altered substantially within the last 50 years and does not retain integrity nor would it qualify as a historic district. As there are no buildings or structures within the main plant that currently qualify for listing in the CRHR, no further consideration is necessary.

Alviso Salt Ponds Historic District. SCVWD Pond A4, located adjacent to the main plant and oxidation ponds, is within the boundaries of the Alviso Salt Ponds Historic District. The primary landscape characteristics of the District are the large evaporation ponds defined by levees. Small scale elements including pilings, remnant piers, small interior berms, and interior water control structures are also included as landscape features. As described in the South Bay Salt Ponds Restoration Project, Final Environmental Impact Statement/Report (EDAW et al, 2007), disturbance of the historic salt ponds of the South San Francisco Bay and associated structures that are considered a significant cultural landscape could have a significant impact. Implementation of the project would not adversely affect the District; therefore, no further consideration of the Alviso Salt Ponds Historic District is necessary.

As there are no resources of the built environment that could be considered historical resources within the project site, the project would have no impact on historical resources.

b) **Less than Significant with Mitigation.** A project would cause a significant impact if project activities resulted in a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

The project site lies in an area within the traditional territory of the Ohlone people (Levy, 1978). Collectively referred to by ethnographers as Costanoan, the Ohlone were distinct sociopolitical groups that spoke at least eight different languages of the same Penutian language group. The Ohlone occupied a large territory from San Francisco Bay in the north to the Big Sur and Salinas Rivers in the south. The primary sociopolitical unit was the tribelet, or village community, which was overseen by one or more chiefs. The WPCP is between the *Puichon* tribal area of San Francisquito and Stevens Creeks and the *Tamien* tribal area of the Santa Clara vicinity (Appendix B in Milliken et al., 2009). Today, the Ohlone still have a strong presence in the San Francisco Bay Area, and are highly interested in their historic and prehistoric past.

The Northwest Information Center records search discussed above indicated that two prehistoric archaeological sites have been previously identified within the records search radius and two additional prehistoric sites are just outside the records search radius. The Ynigo Mound is largest of these sites (CA-SCL-12/H) and consists of an expansive area over 330 meters long by 80 meters wide. The site contains at least two, possibly three, distinct occupation periods, numerous features, a rich assemblage of prehistoric cultural materials including large quantities of shellfish, vertebrates, and carbonized plant remains. Several human burials have also been uncovered at the site (Byrd, 2009; William Self, 2008).

ESA completed a field survey of the main plant on June 11, 2014. The main plant was walked in narrow transects where feasible or observed from vantage points to provide an overall assessment of site conditions. Photographs were taken throughout the main plant and adjacent ponds, especially of infrastructure within the main plant dating from the original construction. Based on a review of geology and geotechnical investigations completed in the project site and vicinity (Fugro Consultants, Inc., 2014), the main plant and ponds are within areas highly disturbed from previous impacts related to the construction and operation of the WPCP, including dredging and fill placement. Ground disturbing activities for the project would be conducted almost exclusively in artificially deposited and/or re-worked soils that have experienced previous construction and engineering.

No archaeological resources were identified during the field survey. The ground surface was entirely paved, built upon, and/or consisted of artificial fill. Based on the historic use of the San Francisco Bay marshland and tidal areas, the known subsurface conditions at the main plant (artificial fill and Bay Mud to a depth of at least 43 feet below the surface), as well as previous disturbance associated with plant construction and dredging of the oxidation ponds, there appears to be a low potential for the discovery of archaeological resources. Despite the low potential, the accidental discovery of archaeological resources cannot be entirely discounted. In the unlikely event that archaeological resources are uncovered, any damage to unique archaeological resources could be a significant impact. Thus, during project implementation, in the event archaeological resources are discovered, work shall be halted and **Mitigation Measure CUL-1** would be implemented. Implementation of the following mitigation measure would reduce potentially significant impacts on archaeological resources to a less-than-significant level.

> **Mitigation Measure CUL-1: Accidental Discovery of Archaeological Resources.** The City or its contractor shall implement the following measure should construction activities result in the accidental discovery of a cultural resource:
>
> If prehistoric or historic-period archaeological resources are encountered, all construction activities within 100 feet shall halt and the City of Sunnyvale shall be notified. Prehistoric archaeological materials might include obsidian and chert

flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include deposits of metal, glass, and/or ceramic refuse. A Secretary of the Interior-qualified archaeologist shall inspect the findings within 24 hours of discovery. If it is determined that the project could damage a historical resource or a unique archaeological resource (as defined pursuant to the CEQA Guidelines), mitigation shall be implemented in accordance with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines, with a preference for preservation in place. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan in consultation with City of Sunnyvale and, for prehistoric resources, the appropriate Native American respresentative. Treatment of unique archaeological resources shall follow the applicable requirements of PRC Section 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

c) **Less than Significant.** A project would cause a significant impact if project activities destroyed a unique paleontological resource or site, or a unique geologic feature.

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

Rock formations that are considered of paleontological sensitivity are those rock units that have yielded significant vertebrate or invertebrate fossil remains. This includes, but is not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent. The project site is underlain by artificial fill over Bay Mud, and is not likely to yield significant paleontological remains because they are surface deposits that are not considered fossil-bearing rock units. In addition, construction of the proposed project would not require substantial excavation to depths at which paleontological resources could be encountered; therefore, the impact would be less than significant.

d) **Less than Significant with Mitigation.** A project would cause a significant impact if project activities disturbed any human remains, including those interred outside of formal cemeteries.

There is no indication that the project site has been used for burial purposes in the recent or distant past. It is unlikely that human remains would be encountered at the project site; however, the unanticipated discovery of human remains cannot be entirely discounted. In the unlikely event that human remains are uncovered, any disturbance of human remains could be a significant impact. With implementation of **Mitigation Measure CUL-2** in the event human remains are encountered, this impact would be mitigated to a less-than-significant level.

> **Mitigation Measure CUL-2: Accidental Discovery of Human Remains.** The City or its contractor shall implement the following measure should construction activities result in the discovery of human remains:
>
> In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the Santa Clara County Coroner has been contacted to determine that no investigation of the cause of death is required. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the City of Sunnyvale for the appropriate means of treating the human remains and any grave goods.

Cumulative Impacts

The geographic scope of potential cumulative impacts on historical resources, archaeological resources, paleontological resources, and human remains encompasses the project site and nearby vicinity. All cumulative projects identified in the vicinity are assumed to cause some degree of disturbance during construction and thus contribute to a potential cumulative impact on cultural resources.

The analysis of cumulative impacts related to historical resources evaluates whether the impacts of the proposed project, together with the impacts of cumulative development, would result in cumulatively significant impacts on the historical resources described above, namely the contributing features of the Alviso Salt Ponds Historic District. Because the project would cause no impact on historical resources, it would not contribute to any potential cumulative effect on the District.

Background research suggests that the potential to encounter archaeological resources, paleontological resources, or human remains would be low. With implementation of **Mitigation Measure CUL-1**, Accidental Discovery of Archaeological Resources, and **Mitigation Measure CUL-2**, Accidental Discovery of Human Remains, the proposed project's contribution to the potential cumulative impact would be less than significant.

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4.6 Geology, Soils, and Seismicity

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
6. GEOLOGY, SOILS, AND SEISMICITY — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

a.i) **Less than Significant.** The motion of earth's crust is expressed along faults, which are zones of weakness in the crust. Surface rupture occurs when movement along a fault breaks through the ground surface, and generally occurs along preexisting faults with relatively recent activity (i.e., within the last 11,000 years). The closest active fault[10] to the project area is the Hayward Fault, located approximately 7 miles northeast of the project area. No active faults are known to traverse through the project area; therefore the possibility of surface fault rupture onsite is very low.

The State of California, through the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act), prohibits the development of structures for human occupancy[11]

[10] A fault is considered active if it has been evidenced to show displacement within the Holocene time period (the last 11,000 years).

[11] A structure for human occupancy is one that is intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person hours per year (Hart, 1997).

across active fault traces[12]. Under the Alquist-Priolo Act, the California Geological Survey (CGS, formerly the California Division of Mines and Geology) must establish zones on either side of the active fault that delimit areas susceptible to surface fault rupture. These zones are referred to as fault rupture hazard zones and are shown on official maps published by the CGS. These zones vary in width, but average about one-quarter mile wide.

While it is possible that surface rupture could occur outside of these zones, the risk of occurrence is not substantial. The project site is not within or immediately adjacent to a mapped Alquist-Priolo Earthquake Fault Zone, therefore the extent to which the project would expose people or structures to impacts involving rupture of a known earthquake fault is less than significant.

a.ii) **Less than Significant.** The project site is located in the San Francisco Bay Area, a seismically active region of California with numerous active faults. Seismic activity in the region is dominated by the San Andreas Fault system, which includes the San Andreas, Hayward, and Calaveras faults. The U.S. Geological Survey (USGS), the CGS, and the Southern California Earthquake Center formed the 2007 Working Group on California Earthquake Probabilities to summarize the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the state of California over the next 30 years. Accounting for the wide range of possible earthquake sources, it is estimated that the Bay Area region has a 63 percent chance of experiencing an earthquake of magnitude 6.7 or higher before 2036 (USGS, 2008). An earthquake of this magnitude could cause strong groundshaking in the project area. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the depth of the rupture below ground surface, the composition of underlying soils, and the duration of shaking.

According to the CGS Probabilistic Seismic Hazard Assessment (PSHA), the peak ground acceleration at the project site for a seismic event with 10 percent chance of exceedance in 50 years could reach 0.5 g[13] (CGS, 2014). The PSHA identifies the hazard from earthquakes that geologists and seismologists agree could occur. The Association of Bay Area Governments (ABAG) has developed Earthquake Shaking Hazard Maps, which predict the potential for ground shaking during major earthquakes on the active

[12] The Alquist-Priolo Act designates zones that are most likely to experience fault rupture, although surface fault rupture is not necessarily restricted to those specifically zoned areas. The zones are defined by the California Geological Survey (CGS). For the purpose of delineating fault rupture zones, the CGS historically sought to also zone faults defined as potentially active, which are faults that have shown evidence of surface displacement during the Quaternary period (the last 1.6 million years). In late 1975, the State geologist made a policy decision to zone only those faults that had a relatively high potential for ground rupture, determining that a fault should be considered for zoning as active only if it was sufficiently active and "well defined." Sufficiently active is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches. Faults that are confined to pre-Quaternary rocks (more than 1.6 million years old) are considered inactive and incapable of generating an earthquake.

[13] g is gravity = 980 centimeters per second squared. Acceleration is scaled against acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0 g). Acceleration of 1.0 g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds.

faults in the Bay Area. The Shaking Hazard Maps rank degrees of ground shaking intensity based on the Modified Mercalli Intensity (MMI) scale. For context, a peak ground acceleration of 0.5 g correlates to very strong (MMI VIII) ground shaking (ABAG, 2010).

In addition, the soil type at the project site could amplify waves generated from nearby faults. Areas underlain by soft sediments, such as Bay Mud, are considered to be susceptible to higher groundshaking hazards than areas underlain by bedrock. Soils underlying the project area include varying amounts of artificial fill (up to 10 feet thick) consisting of stiff to very stiff[14] sandy clay / clayey sand (Fugro, 2014). Underlying the fills are stiff to very stiff, silty clays of varying plasticity.

Predicting seismic events is not possible, nor is providing mitigation that can entirely reduce the potential for injury and damage that can occur during a seismic event. Although some structural damage is typically not avoidable during an earthquake, building codes, construction ordinances, and modern construction techniques and materials have been developed to reduce structural damage and minimize major injury during a seismic event. This is especially true in California where many of the seismic design criteria and standards contained in the California Building Code (CBC) are among the most stringent in the world. The CBC is based on the International Building Code and contains informed and current seismic design criteria widely adopted locally throughout California. The project is required by California law to comply with the seismic design criteria set forth in the CBC. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures. While building codes assume that some damage may occur during an earthquake, they are designed to, at a minimum, prevent loss of life and limb and reduce the potential of structural collapse.

Seismic design consistent with current professional engineering and industry standards would be employed in the proposed construction for resistance to strong ground shaking. At a minimum, the CBC design criteria would be required during design and construction of all elements of the project. Under requirements of the CBC, the underlying soils on the project site would be investigated to determine the response of those underlying materials to ground shaking generated during an earthquake. The earthquake design requirements of the CBC include determination of a Seismic Design Category for a project that combines the occupancy categories with the level of expected ground motions at the site to determine appropriate design specifications. Design specifications are then determined according to the Seismic Design Category in accordance with Chapter 16 of the CBC. Based on the subsurface conditions encountered at the site, a Site Class “D” (stiff soil profile) should be assumed for design for the proposed structures (Fugro, 2014). Chapter 18 of the CBC also addresses measures to be considered in structural design, which may include ground stabilization, selecting appropriate foundation type and depths, selecting

14 “Stiff” clay is clay that is relatively difficult to deform.

appropriate structural systems to accommodate anticipated displacements, or any combination of these measures.

In accordance with CBC requirements, a geotechnical investigation has been conducted for the project area and proposed facilities, which includes recommendations applicable to foundation design, earthwork, backfill, and site preparation to address potential seismic and geologic hazards (Fugro, 2014). Geotechnical engineering recommendations have been incorporated into the project design and specifications. The construction manager would conduct inspections and certify that all design criteria have been met in accordance with the California Building Code, as well as any other applicable local ordinances.

The project would not increase the exposure of people and structures to adverse effects of seismic ground shaking as compared to existing conditions because the project would replace existing aged facilities with new facilities and would be developed in compliance with current seismic standards, which are more stringent than those governing the existing buildings and facilities on the site, thereby reducing risk of seismically induced damage as compared to existing conditions. Buried pipelines are generally less susceptible to damage from strong groundshaking than aboveground structures, since they are imbedded in compacted backfill that can tolerate more seismic wave motion.

Upon compliance with applicable construction requirements in the CBC, as well as incorporation of the design criteria recommendations made by the geotechnical engineer or engineering geologist, effects of earthquake-caused damage on the proposed project and occupants of project structures from groundshaking would be reduced to the maximum feasible degree. Therefore, considering that laws and regulations are currently in place that will ensure design and construction in compliance with modern engineering standards, the potential for substantial damage to property or injury/loss of life as a result of strong seismic ground shaking is less than significant.

a.iii) **Less than Significant.** Seismic shaking can also trigger secondary ground-failures caused by liquefaction. Liquefaction is a phenomenon where saturated subsurface soils lose strength because of increased pore pressure and exhibit properties of a liquid rather than those of a solid. The soils most susceptible to liquefaction are clean, loose, uniformly graded, saturated, and fine-grained and occur close to the ground surface, usually at depths of less than 50 feet. Settlement can occur as a result of seismic ground shaking due to liquefaction of the subsurface soils. Based on seismic hazard mapping conducted by the CGS in accordance with the Seismic Hazard Zonation Program, the project site is within an area designated as having a high potential for liquefaction (CGS, 2006). Such a designation denotes an area where historical occurrence of liquefaction, or local geologic, geotechnical and groundwater conditions indicate a potential for permanent ground displacements and all construction must adhere to evaluate and mitigate any liquefaction hazards in accordance with CGS Special Publication 117A.

During geotechnical investigations conducted at the project site (Fugro, 2014), various borings encountered sand lenses. In the eastern portion of the site, borings encountered

layers of medium dense, silty sand of approximately 5 feet thick at depths ranging from 15 to 40 feet. In the western portion of the site, borings from previous investigations did not indicate presence of potential liquefiable material except in two borings where a 2 to 3 foot-thick sand lens was encountered at depths ranging from about 20 to 36 feet In the vicinity of the oxidation ponds, potentially liquefiable materials were encountered in various borings, with a thickness up to 15 feet as observed from previous investigations.

Based on these findings, a liquefaction evaluation was conducted as part of the geotechnical investigation (Fugro, 2014). Because of the isolated nature of the liquefiable layers and the fact that the plant site is predominantly underlain by cohesive materials, it was determined that the liquefaction potential within the plant site is low; however, the liquefaction potential may increase toward the oxidation ponds due to the increasing thickness of liquefiable material (Fugro, 2014). Other geologic hazards such as lateral spreading were considered to be unlikely at this site due to the relatively level terrain and the distance from a known active fault (Fugro, 2014).

As discussed under a.ii), above, the CBC requires that the potential for liquefaction and soil strength loss be evaluated for site-specific peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions. In addition, the evaluation must be consistent with Special Publication 117A and the Seismic Hazards Zonation Program. The geotechnical investigation conducted for the site (Fugro, 2014) included such analysis and suggested potential measures to address the liquefaction hazard, such as designing structures for up to one inch of post-liquefaction settlement across 50 feet (Fugro, 2014). To address these concerns, the project includes excavation of surface soils and surcharging the site with 10 feet of imported soil to consolidate the underlying soil layers. With compliance with applicable construction requirements in the California Building Code and Special Publication 117A, which include incorporation of design criteria from the geotechnical engineer or engineering geologist, this impact would be less than significant.

a.iv) **No Impact.** The topography within the project area is essentially flat (Fugro, 2014), and is therefore not subject to landslide or slope failure. The CGS has mapped seismic hazard zones for the area and the project site is not within a zone designated at risk of earthquake-induced landslides (CGS, 2006). Additionally, ABAG (2014a and 2014b) has mapped areas at risk of earthquake- and rainfall-induced landslides based on historic landslide information and the project area is designated as “flatland” and has not been subject to historic landslides or earth flows. There would be no impact associated with landslides.

b) **Less than Significant.** At the project site, areas that are susceptible to erosion are those that would be exposed during the construction phase. Construction activities required for project site development, such as earthmoving, excavation, backfilling, grading, and placement of fill material for surcharging purposes can expose areas of loose soil. If not properly stabilized or protected, these soils could be subjected to soils loss and erosion by

wind and storm water runoff. Concentrated water erosion, if not managed or controlled, can eventually result in significant soils loss.

The potential for soil erosion and loss of topsoil is addressed in *Hydrology and Water Quality*, which discusses the potential adverse effects of runoff with respect to erosion and sedimentation. In addition, the analysis presented in *Agricultural and Forest Resources* concludes that there would be no impact on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, thereby resulting in no significant impact with respect to loss of topsoil.

Given that the majority of the project site is developed, implementation of the project is not expected to expose soils in a manner that could result in substantial loss of topsoil or significant, long-term erosion. However, temporary erosion hazards could arise during construction activities occurring on land outside the current main plant site that is not currently developed (i.e. filling the drainage channel and constructing embankments and access roads). As discussed in *Hydrology and Water Quality*, all waters encountered or used within the main plant site during construction (including construction dewatering, stormwater and water used as part of dust control) would be managed by grading the site throughout construction and implementing temporary drainage systems such that stormwater is captured and discharged to the WPCP storm drainage system and routed to the headworks of the WPCP for treatment. Such grading and dust control practices would limit the loss of soil resulting from wind and water and would minimize the potential release of sediments (and other contaminants) into surface waters as a result of erosion. The potential for erosion impacts during project construction would be less than significant.

c) **Less than Significant.** The potential for seismic-related ground failure, including liquefaction, for the project is discussed above under a.iii). The potential landslide hazard for the project is discussed above in a.iv).

The native, near-surface soils underlying the project area consist of moderately compressible clays with water content ranging from 20 to 30 percent and adding new structures could induce settlement of the underlying soils (Fugro, 2014). As discussed in Section 2, *Project Description*, imported clean fill material would be brought onsite to backfill the project area to the design finished elevation. Approximately 10 feet of additional soil would be deposited on the project site and allowed to remain for three to five months. The weight of the added material will act to compact or consolidate the underlying soils, a process known as “surcharging,” as settlement occurs. Following the consolidation period, the surcharged material would be removed from the site prior to construction. After the underlying soils have adequately compacted, anticipated settlement hazards, including differential settlement, would be reduced to tolerable limits. After the surcharge is removed, the static settlement due to new foundation loads should be less than one inch, with differential settlement on the order of one half -inch (Fugro, 2014).

Treatment of subsurface soils underneath the proposed facility at the project site according to measures designed by a geotechnical engineer in accordance with state building code requirements, such as the "surcharging" described above, would reduce the potential hazard from unstable soils, including lateral spreading, subsidence, liquefaction, or collapse to a less-than-significant level.

d) **Less than Significant.** Expansive soils can damage overlying structures over time through different periods of wetting and drying. In general, the effects of expansive soils can damage foundations and aboveground structures, paved parking areas, and concrete slabs. Clay rich soils at the project site were identified as moderately to extremely expansive in the geotechnical investigation conducted for the project (Fugro, 2014). Subsurface samples collected during the geotechnical investigation were also considered expansive based on the criteria in the California Building Code due to their plasticity index. The expansive soils present at the project site could create substantial risks to the structures planned for the project site.

The California Building Code discussed above under a) includes building permit requirements that mitigate the hazard posed by expansive soils. The CBC stipulates that a geotechnical report containing recommendations to mitigate the effects of expansive soils and special design and construction provisions for foundations of structures to be installed on expansive soils must be prepared and submitted to the issuer of the building permit. The geotechnical study for the project (Fugro, 2014) presents the results of a field exploration and laboratory-testing program that includes geotechnical recommendations relating to expansive soils.

Typically, expansive soils can be re-engineered or replaced with engineered fills during grading and prior to construction to reduce the potential for adverse effects. Excavation and surcharging of the project site as proposed, in accordance with geotechnical recommendations, would eliminate the potential effects of expansive soils. Thus, with compliance with applicable construction requirements in the California Building Code that require application of design criteria from the geotechnical engineer or engineering geologist, this impact would be less than significant.

e) **No Impact.** Implementation of the project would not involve the use of septic tanks or alternative wastewater treatment disposal systems to handle wastewater. No impact is expected.

Cumulative Impacts

Impacts related to geology and soils are generally localized and do not result in regionally cumulative impacts. Geologic conditions can vary significantly over short distances creating entirely different effects elsewhere. Unless a project would alter the soils and rock underlying other adjacent projects or affect the susceptibility of surrounding land to landslides, impacts related to geologic, soils, and seismic hazards would be limited to the project site. The geographic scope of cumulative impacts related to geologic, soils, or seismic hazards therefore includes the

project site and any projects immediately adjacent to it. Potential impacts of the project include: exposure of structures to seismic surface rupture, ground shaking, and liquefaction; exposure of soil to erosive forces; and placement of structures on unstable or expansive soil. However, with the incorporation of standard construction and engineering practices required under the CBC, all geologic, soils, and seismic hazard impacts of the project would be less than significant.

The ongoing Sunnyvale WPCP improvements and the Sunnyvale East and West Channels project are both adjacent to the proposed project site and construction would occur at the same time as the proposed project. These projects also would be constructed in accordance with the most recent version of the California Building Code construction and seismic safety requirements and recommendations contained in the respective project-specific geotechnical reports prepared prior to their construction. For this reason, the potential for a cumulative impact is unlikely, and the less-than-significant incremental project-specific impacts on geology, soils, and seismicity would not cause or contribute to a significant cumulative effect and would not be cumulatively considerable.

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4.7 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
7.	**GREENHOUSE GAS EMISSIONS — Would the project:**				
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, similar to a greenhouse. The most abundant GHGs in the earth's atmosphere are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). The accumulation of GHGs has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and the impact of human activities that alter the composition of the global atmosphere. Both natural processes and human activities emit GHGs. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the vast majority of the scientific community now agrees that there is a direct link between increased emission of GHGs and long term global temperature. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

GHG-related impacts are considered to be exclusively cumulative impacts; there are no non-cumulative GHG emissions impacts from a climate change perspective (CAPCOA, 2008).

a) **Less than Significant.** The project would generate GHG emissions during both the construction and operational phases. With regard to long-term operations, in accordance with the BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2011), this project would have a significant impact if the project emits GHGs greater than 1,100 metric tons per year carbon dioxide equivalent (CO2e)[15] from sources other than permitted stationary sources. Although the BAAQMD CEQA Guidelines do not identify a threshold for GHG

[15] A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

emissions from construction-phase activities, GHG emissions were quantified and are presented below for informational purposes.

Construction Emissions

Project-related construction activities would generate GHG emissions associated with the use of heavy-duty off-road construction equipment and automobile and truck trips required to transport workers, materials, and debris to and from the project site. Total construction emissions associated with the project were estimated using project-specific information. **Appendix A** contains the emissions estimate calculations and assumptions used to estimate construction-phase GHG emissions, based on the following information:

- Types and numbers of off-road construction equipment to be used;
- Number of daily on-road vehicle trips (construction workers and haul trucks);
- Daily equipment usage rates (hours per day, total days); and
- Horse-power (hp) rating for each type of off-road equipment used.

The combustion of diesel fuel to provide power for the operation of various equipment results in the generation of GHGs. Off-road construction equipment diesel fuel consumption rates were generated for the Bay Area Air Basin using CARB's Off-road 2011 emissions inventory database model. The fuel consumption rates are based on the estimated year that project construction activities would commence (2015). GHG emissions for off-road construction equipment were estimated by multiplying the total diesel fuel consumed by each piece of equipment by CO_2, N_2O, and CH_4 emission factors obtained from The Climate Registry (TCR) for diesel fuel combustion. N_2O and CH_4 emissions were multiplied by their respective global warming potentials and added to the CO_2 emissions to obtain CO_2e emissions.

GHG emissions from motor vehicles used during construction were estimated using emission factors from the EMFAC2011 model multiplied by vehicle miles travelled estimated for the specific vehicle type. As EMFAC2011 provides GHG emission factors only for CO_2 emissions, N_2O and CH_4 emission factors for gasoline combustion were obtained from TCR. GHG emissions in the form of CO_2e were calculated by multiplying the estimated total miles travelled by project-related worker vehicles by the GHG emission factors, then multiplying the N_2O and CH_4 emissions by their respective global warming potential, and then adding the CO_2, N_2O, and CH_4 emissions. Daily trip generation numbers and the duration of construction were obtained from Carollo Engineers (see Appendix A). Construction worker trip emissions were estimated using the assumption that each vehicle trip would travel 40 miles round trip. **Table 7** below summarizes the estimated GHG emissions that would be generated during project construction.

Operation Emissions

No new staff would be needed to operate the project and so the number worker commute trips to the site would remain unchanged and haul truck trips would only increase by 1-2 truck trips per day.

TABLE 7
TOTAL GHG EMISSIONS FROM PROJECT CONSTRUCTION

Construction Emissions Source		CO_2e (metric tons)
Site Preparation	Construction equipment and material haul trips	996.7
	Construction Worker Commute trips	136.9
Facilities Construction	Construction equipment and material haul trips	210.8
	Construction Worker Commute trips	233.6
Demolition	Construction equipment and material haul trips	81.1
	Construction Worker Commute trips	32.8
	Total Emissions During 4-year Construction Period	1,692.0
	Annual Average Emissions	423.0

SOURCE: See **Appendix A**

Under existing conditions, the WPCP's power generation facility supplies almost all (94%) of the plant's electricity (Carollo, 2014). The power generation facility is a cogeneration plant that uses digester gas and landfill gas, supplemented as needed with natural gas supplied by PG&E, to produce heat and power. The existing influent pump engines run on digester gas and also provide heat to the digesters.

With implementation of the project, the existing influent pumps would be replaced with new, higher efficiency pumps driven by electric motors that would rely on electricity supplied by PG&E. The digester gas that currently powers the existing influent pump engines would instead be used by the power generation facility. Other proposed facilities include nine sludge pumps (three of which are standby), four scum pumps at the primary treatment facility (two of which are standby) and mechanized dewatering equipment that would replace the existing dewatering beds. These facilities would be powered by electricity from the plant's power generation facility. The sludge pumps and scum pumps would have a similar electricity demand as the existing equipment they would replace. Currently, sludge is dewatered on tiled drying beds with 2 diesel-driven front end loaders (85 hp and 50 hp) working 80 hours and 50 hours a month, respectively, to turn the biosolids. This amounts to a usage of 111,600 hp-hours per year. Using diesel fuel consumption rates from CARB's Off-road 2011 emissions inventory database model and GHG emission factors from TCR, the direct GHG emissions generated by the equipment at the existing dewatering beds amounts to 21.1 metric tons of CO_2e per year. The project proposes to use a trailer mounted belt press to dewater the biosolids. The proposed dewatering equipment, including the feed pumps, belt press, spray wash and conveyor would amount to a total of 62 hp and is expected to be used for about 800 hours per year. This amounts to a usage of 49,600 hp-hours per year of electricity use. Using PG&E's GHG emission factors for electricity generation, indirect GHG emissions from the proposed dewatering equipment would be 6.3 metric tons of CO_2e per year. Therefore,

the project's proposal to use mechanized dewatering equipment instead of the existing dewatering beds would actually result in a net reduction of GHG emissions of approximately 14.8 metric tons per year of CO_2e from the process.

With the influent pumps sourced by electricity, the electricity load of the WPCP would increase by 200 hp. However, this would be accompanied by a reduction in natural gas used at the plant since the digester gas that was previously used to fuel the influent pumps would now be directed to the cogeneration facility thereby reducing the natural gas use at the cogeneration facility. Using PG&E's GHG emission factors for electricity generation, this increase in electricity use would result in an additional 220.8 metric tons of indirect emissions of CO_2e per year. It is estimated that natural gas use at the plant would reduce by 11,410,000 cubic feet per year. Using EPA emission factors for natural gas, this amounts to a reduction of 621.8 metric tons of CO_2e per year.

The 2,500 kW emergency standby generator in the switchgear building would be another source of GHG emissions. The generator would be subject to BAAQMD Regulation 2 and require a permit to operate. Routine testing would be limited to a maximum of 50 hours per year.

Table 8 summarizes the change in operational GHG emissions with the implementation of the proposed project.

TABLE 8
CHANGE IN GHG EMISSIONS FROM PROJECT OPERATION

Operational Emissions Source	CO_2e (metric tons per year)
Increase in electricity load due to influent pumps	220.8
Reduction in natural gas use at cogeneration facility	- 621.8
Increase in electricity load from mechanized dewatering equipment	6.3
Reduction in diesel fuel used by front end loaders at the existing dewatering beds	- 21.1
Net Change in Annual Operational GHG Emissions due to the Project	**- 415.8**

SOURCE: See **Appendix A**

In summary, although the WPCP's electricity use would increase due to the new electricity powered influent pumps and the mechanized dewatering equipment, there would be a corresponding decrease in natural gas usage at the WPCP's power generation facility as the digester gas that was previously used to power the influent pumps would now be directed to the power generation facility. The existing internal combustion engine driven pumps powered by digester gas are outdated and inefficient and have been exempt from the WPCP's Title V permit requirements. The new influent pumps would be cleaner (as they would be subject to Best Available Control Technology requirements) and more efficient. Overall, although there would be an increase the WPCP's electricity usage, the

decrease in natural gas use at the power generation facility and the replacement of older equipment with newer, more efficient, cleaner equipment would more than offset the increase in GHG emissions. Operational GHG emissions generated from the implementation of the proposed project (excluding emissions from the emergency standby generator) would decrease by 415.8 metric tons of CO_2e per year when compared to existing conditions. Therefore, this impact would be less than significant.

b) **Less than Significant.** The CEQA Guidelines (Section 15064(h)(3)) state that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions. Discussed below are the City's adopted *City of Sunnyvale Climate Action Plan – City Operations* (Sunnyvale, 2007) and draft Climate Action Plan, the latter of which is intended to meet the recommendations outlined in CEQA Guidelines Section 15064.4 and BAAQMD's expectations for a Qualified GHG Reduction Strategy.

Sunnyvale Climate Action Plan – City Operations

The City of Sunnyvale has established a GHG reduction plan for City-run operations in its *City of Sunnyvale Climate Action Plan – City Operations* (Sunnyvale, 2007). The plan analyzed the CO_2 emissions profile related to City operations as driven by 15 City facilities (including the WPCP) that accounted for more than half of the City's emissions (Sunnyvale, 2007). In general, WPCP natural gas consumption is a significant source of city facility emissions. However, since the installation of the cogeneration facility at the WPCP in 1997, the report indicates that CO_2 emissions from the WPCP decreased because the use of landfill gas from the Sunnyvale landfill and digester gas from the WPCP to generate heat and power for onsite processes displaced purchased natural gas. The use of biogenic[16] gas replaced a fossil fuel source; consequently, anthropogenic[17] CO_2 emissions generated by the WPCP operations have decreased. Over time, however, landfill gas is steadily degrading, depleting the amount of biogas available for the power generation facility and increasing reliance on natural gas from PG&E. As part of its Master Plan, the City is currently exploring alternative forms of biogas generation to offset the reduction in landfill gas.

Since the WPCP constitutes a large portion of the city's CO_2 inventory, the report identifies process efficiency improvements at the WPCP as an important way to reduce energy use and achieve significant emissions reductions. The report also identifies 5

16 Biogenic GHG emissions are derived from natural sources, including the natural decomposition of biomass and combustion of biomass or biomass-derived fuels. Biomass is non-fossilized organic matter from plants, animals, and microorganisms, including products, byproducts, and wastes from agriculture, forestry and related industries, as well as the non-fossilized biodegradable fractions of industrial and municipal wastes, including gases and liquids recovered from its decomposition.

17 Anthropogenic GHG emissions derive from the combustion of fossil fuels. Energy-related CO_2 emissions, resulting from fossil fuel exploration and use, account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. The distinction between anthropogenic and biogenic sources of GHG emissions is important because these sources have different impacts on the global carbon cycle. Carbon in fossil fuel reservoirs (e.g., gas deposits) was removed from the atmosphere over millions of years and was isolated from the active carbon cycle. In contrast to fossil-fuel carbon, carbon present in biomass is cycling through the atmosphere and global carbon cycle on a much faster scale.

percent below 1990-91 emissions levels as a reasonably ambitious goal and returning to 1990-91 emissions levels as a very achievable goal for City operations. Though the City had achieved a 17 percent reduction in emissions over 1990-91 levels by 2005-06, the decrease in landfill gas available for use at the cogeneration facility and the increase in natural gas use as a result have increased emissions back to levels well above 1990-91 levels.

Consistent with these goals, implementation of the proposed project would reduce energy use at the WPCP, specifically natural gas use. Although the project would result in a small increase in electricity demand, the reduction in natural gas use would more than offset the emissions from the increase resulting in a net decrease in GHG emissions. The proposed project would therefore be consistent with the City of Sunnyvale Climate Action Plan and this impact would be considered less than significant.

Draft Sunnyvale Climate Action Plan

In April 2014, the City of Sunnyvale prepared a draft Climate Action Plan. Once adopted, the Plan would streamline the CEQA review process of projects in Sunnyvale by meeting the BAAQMD's expectations for a Qualified GHG Reduction Strategy. The Climate Action Plan would also identify goals and reduction measures to help the City achieve the state-recommended GHG emission reduction target of 15% below 2008 levels by the year 2020 (equivalent to 1990 emissions).

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4.8 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
8.	**HAZARDS AND HAZARDOUS MATERIALS — Would the project:**				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion

a, b) **Less than Significant.**

Construction. Hazardous materials that would be used during project construction include fuels, lubricants, and solvents needed for the fueling and maintenance of construction equipment. Storage and use of hazardous materials at the project site could result in the accidental release of small quantities of hazardous materials, which could degrade soil and groundwater quality and/or surface water quality.

As described in greater detail in *Hydrology and Water Quality*, stormwater runoff from within the main plant area is currently captured and conveyed to the existing headworks for treatment prior to discharge to the bay. All waters encountered or used within the main plant site and the filled southeastern channel during construction (including construction dewatering, stormwater and water used as part of dust control) would be managed by

grading the site throughout construction and implementing temporary drainage systems such that stormwater is captured and discharged to the WPCP storm drainage system, which is routed to the headworks for treatment and subsequently discharged in accordance with the City's existing NPDES permit. Adherence to existing applicable water quality control standards would be required as part of the NPDES permit for the WPCP, and would ensure that small amounts of spilled hazardous materials entrained in surface water within the main plant would not pose a significant hazard to the public or the environment.

***Operation*.** Water treatment chemicals used for project operations include ferric chloride and polymer, for chemically enhanced primary treatment. These chemicals would be stored in small tanks and drums within the CEPT facility and only utilized during peak flows when one of the primary sedimentation tanks is out of service. The CEPT facility would be constructed with appropriate hazardous materials containment features to contain potential accidental releases. Similarly, the diesel fuel storage tank that would be installed for the standby diesel generator would also include the required secondary containment. Transport, storage, handling, and disposal of these chemicals would comply with all hazardous materials regulations. Prior to operations, the WPCP would update its Hazardous Materials Business Plan for review by the local regulatory agency. With compliance with regulations for the safe and lawful handling of hazardous materials, the project would not create a significant hazard to the public or the environment from the routine use or reasonably foreseeable release of hazardous materials. The impact would be less than significant.

c) **No Impact.** There are no existing or proposed schools within one-quarter-mile of the project site.

d) **Less than Significant.** California Government Code Section 65962.5 requires state and local agencies to compile and update, at least annually, lists of hazardous waste sites and facilities. While Government Code Section 65962.5 makes reference to a "list", commonly referred to as the Cortese List, this information is currently available from the following online data resources (California Environmental Protection Agency [CalEPA], 2014):

- List of hazardous waste and substances sites - California Department of Toxic Substances Control (DTSC) EnviroStor database (DTSC, 2014a);
- List of leaking underground storage tank sites - SWRCB GeoTracker database (SWRCB, 2014a);
- List of solid waste disposal sites with waste constituents above hazardous levels outside the management unit (SWRCB, 2014b);
- List of active cease and desist orders and cleanup and abatement orders that concern the discharge of wastes that are hazardous materials (SWRCB, 2014c); and,
- List of hazardous waste facilities subject to corrective action (DTSC, 2014b)

Based upon review of these data resources, the project site was not identified as a known hazardous materials site. Further, a site investigation conducted at the WPCP did not detect soil or groundwater contamination at the WPCP which could pose hazards to construction worker health (Carollo/HDR, 2014). The site investigation consisted of 13 soil borings at locations throughout the WPCP, including four within the project site. Laboratory analysis included metals, semi-volatile organic compounds, pesticides and polychlorinated biphenyls.

For these reasons, the potential impact on the public or the environment of encountering hazardous materials in soil or groundwater during construction would be less than significant.

e, f) **Less than Significant.** The project site is located approximately 1.75 miles east of the Moffett Federal Airfield, which is operated by the NASA Ames Research Center. The project site is located outside the airport's noise contour and approach zone. The proposed structures would be well below the airport's height restriction area. The maximum allowable structure height in the project vicinity is 182 feet (Santa Clara County Airport Land Use Commission, 2012). Based on these factors, the project's proximity to the airfield would not result in a safety hazard for people working at the project site.

g) **No Impact.** Construction and operation of the project would not involve the temporary or permanent closure of roads, and would not interfere with any adopted emergency response or evacuation plans.

h) **Less than Significant.** The project site is not located in or adjacent to a designated wildland area that would have substantial forest fire risks or hazards (CAL FIRE, 2008). Operation of the primary treatment facility would be similar to existing primary treatment operations. The two proposed diesel standby generators would meet National Fire Protection Association safety standards and would be operated in accordance with the California Fire Code regulations. The risk of increased fire hazards from operation of the proposed primary treatment facility at the project site would be less than significant.

Cumulative Impacts

Impacts that could result from the project's use of hazardous materials would be primarily restricted to the project area and immediate vicinity; therefore, the geographic scope for cumulative impacts is limited to the project area and immediate vicinity. Construction of the ongoing Sunnyvale WPCP improvements and the Sunnyvale East and West Channels project are both located within the immediate vicinity and would also involve the use of hazardous materials. Should accidental hazardous materials releases from the project and these nearby projects occur, a significant cumulative impact on water quality in downstream areas could result. However, as discussed above, because these cumulative projects would be subject to regulations requiring implementation of a SWPPP which would reduce the potential for accidental releases to occur and minimize the potential for such releases to be conveyed offsite in stormwater, the potential cumulative impact from use of hazardous materials during construction would be less than significant.

Impacts that could result from location on a known hazardous materials site would be site-specific and would not contribute to cumulative impacts; further, the project site is not listed as a known hazardous materials site. Impacts that could result from location within two miles of Moffett Airfield would also be site-specific and depend upon the height of proposed structures and their relationship to the airport. Height limitations would apply to all projects within the airport's land use plan area, therefore, no significant cumulative impact would result from construction of the project and other projects in the airport vicinity. The proposed project and other projects in the vicinity are not located in a wildland fire area, therefore no significant cumulative impact related to wildland fire risk would result from construction and operation of these projects.

References

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4.9 Hydrology and Water Quality

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
9.	**HYDROLOGY AND WATER QUALITY — Would the project:**				
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☒	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

a, f) **Less than Significant.**

Construction. Stormwater runoff from soil disturbance associated with construction activities is a common source of pollutants to receiving waters. Grading and earthmoving would expose soil and could result in erosion and excess sediments carried in stormwater runoff to San Francisco Bay. Increased sediment concentrations in stormwater could result in higher turbidity levels and have a potentially adverse impact on water quality. Stormwater runoff could also convey fuels and hazardous materials used during construction if releases were to occur (issues relating to accidental spills and releases are addressed in *Hazards and Hazardous Materials*).

Construction or grading activities that disturb more than one acre of land are subject to the SWRCB's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) under the NPDES permit program under Section 402(p) of the federal Clean Water Act. The permit requires development of a SWPPP and implementation of appropriate BMPs to address water quality impacts of construction activities. However, all waters encountered or used within the main plant site during construction (including construction dewatering, stormwater and water used as part of dust control) would be managed by grading the site throughout construction and implementing temporary drainage systems such that stormwater is captured and discharged to the WPCP storm drainage system, which is routed to the headworks for treatment and subsequently discharged in accordance with the City's existing NPDES permit, which has discharge limits for listed pollutants and constituents. Adherence to these requirements would ensure that receiving waters and associated beneficial uses would be protected against water quality degradation that could otherwise result from construction activities. Therefore, stormwater runoff generated during project construction activities within the main plant site would not require coverage under the Construction General Permit. Impacts on water quality, water quality standards, or waste discharge requirements related to short-term construction activities within the WPCP facility site would be less than significant.

Project construction, grading and backfilling are also proposed to occur on land outside the current WPCP fenceline to expand the plant area to the south and east, requiring the filling of the adjacent southeastern channel to accommodate construction of a new embankment, access road, and perimeter fencing. Activities within the drainage channel would result in disturbance of less than one acre and a Construction General Permit would not be required, and would be graded in a way that results in capture of stormwater to be routed to the WPCP storm drainage system, similar to the drainage routing for the main plant site discussed above. Because all stormwater would be captured and treated to the standards of the existing WPCP NDPES permit prior to discharge into the bay, the potential for impacts relating to water quality, water quality standards, or waste discharge requirements during project construction would be less than significant.

Operation. With implementation of the Primary Treatment Facility project, the WPCP would continue to be operated in compliance with its NPDES waste discharge permit. The project would improve the reliability and effectiveness of the primary treatment process. The addition of screening facilities to remove large debris and replacement of the existing grit removal system with an upgraded system would improve the effectiveness of subsequent treatment processes. In addition, replacement of the aging facilities with more modern equipment for removal of suspended solids and scum would also contribute to improved effluent water quality.

Following construction, the expansion area (drainage channel) would be incorporated into the WPCP storm drainage system. Stormwater runoff from the entire project site would drain to this system, which routes waters to the headworks for treatment and discharge as

per the City's NPDES permit. Impacts to water quality, water quality standards, or waste discharge requirements related to long-term operations would be less than significant.

b) **Less than Significant.** The project would not involve long-term groundwater extraction as part of operations. Project construction would involve subsurface excavation (for utilities and structural support) that may encounter groundwater. Groundwater depths vary across the project site from 2 to 15 feet below ground surface (Fugro, 2014). If encountered during excavation activities, groundwater would have to be pumped out of the construction trench in order to create a dry work area. However, this dewatering activity would be temporary and unlikely to substantially affect local groundwater levels. The majority of the project site is already currently covered with impervious surfaces. The project would not lower the groundwater table as a result of groundwater extraction or through a substantive reduction in groundwater recharge. Therefore, potential impacts relating to groundwater supply and recharge would be less than significant.

c) **Less than Significant.** The project would alter the existing southeastern channel that borders the south and east edge of the current plant boundary. The drainage channel would be backfilled to expand the WPCP acreage to accommodate the Primary Treatment Facility. However, a box culvert would be constructed within the drainage channel of sufficient capacity to continue to convey stormwater in a manner comparable to existing conditions in terms of stormwater volume, flow rate, and conveyance route. Therefore, the alteration of the existing drainage pattern would not result in substantial erosion or siltation on- or offsite. The impact would be less than significant.

Minor alterations to the existing WPCP storm drainage system would occur under the project to accommodate stormwater runoff from the expansion area (drainage channel area). Storm water runoff would continue to be collected by and discharged to the WPCP storm drainage system, which is routed to the headworks for treatment. There would be no substantial change above the current baseline in runoff flow rates nor would the project increase erosion or siltation offsite. The impact would be less than significant.

d) **Less than Significant.** As discussed in c) above, the adjacent southeastern channel would be filled for the project and it would be replaced with a box culvert of sufficient capacity to continue to convey stormwater in manner comparable to existing conditions in terms of stormwater volume, flow rate, and conveyance route. Alteration of the existing drainage pattern to convey stormwater runoff within a culvert rather than the existing drainage channel would not increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite as compared to existing conditions. The majority of the Primary Treatment Facility project activities are located within the existing developed plant area which is mostly paved. The impervious surface area would increase by an acre or more, as the project expands the main plant area about 75 feet to the east. Runoff would be accommodated within the existing capacity of the WPCP stormwater drainage system and would not increase the potential for on- or offsite flooding. The impact would be less than significant.

e) **Less than Significant.** As discussed above, the existing WPCP storm drainage system would be expanded to collect stormwater runoff from the project site as currently occurs at the site. The runoff would be accommodated within the existing system. Runoff water quality from the project site would be similar to current WPCP stormwater quality; regardless, it would be treated at the WPCP prior to discharge. The impact would be less than significant.

g) **No Impact.** The project does not include the construction of housing.

h) **Less than Significant.** The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) identify areas that are subject to inundation during a flood having a 1-percent chance of occurrence in a given year (also known as the 100-year flood). The City of Sunnyvale relies upon the FEMA FIRMs to identify areas of special flood hazard, and provisions for flood hazard reduction that apply to construction, utilities, and homes in these areas are included in the Municipal Code (Chapter 16.62, City of Sunnyvale Municipal Code, *Prevention of Flood Damage*). The FIRM for the project area designates the project site as a Special Flood Hazard Area (FEMA Zone AE) that is within the 100-year flood zone (FEMA, 2009; FEMA, 2014). The WPCP, however, is surrounded on three sides by levees providing an unknown level of protection from a combination of fluvial and tidal flooding. Currently these levees are not certified in accordance with FEMA criteria because they do not provide adequate freeboard to protect the WPCP in the event of a 100-year flood (Carollo/HDR, 2013).

The SCVWD is currently designing improvements to provide fluvial flood protection to the areas at the WPCP and nearby areas. The Construction of the East and West Channels project is planned for 2015-2016, which would be concurrent with Primary Treatment Facility Project construction (SCVWD, 2013). Reconstructed levees, floodwalls, and channels proposed under the SCVWD project would provide protection against fluvial flooding based on a water surface elevation (base flood level) of 12.24 feet, which would accommodate the 100-year flood elevation and projected sea level rise, discussed further below (Carollo/HDR, 2013; SCVWD, 2013). As part of this project, a floodwall would be constructed adjacent to the main plant area.

While construction of aboveground facilities within a flood hazard zone could potentially impede or redirect flood flows, most of the proposed facilities would be located within the existing levees surrounding the WPCP and generally would replace existing structures and, therefore, are not expected to result in a substantive net change that would increase any flooding concerns. As described under item a), a temporary dewatering system would be installed at the southeastern channel to convey water to the stormwater pump station discharge pipelines during construction. Preliminary design for the permanent improvements to the southeastern channel includes installation of one 7-foot by 14-foot box culvert at the base of the existing drainage channel. The proposed culvert has been sized to accommodate current and future stormwater flows within the drainage channel. Implementation of the project would be unlikely to displace floodwaters, raise flood elevations, create new flooding impacts (e.g., by causing flooding of existing

facilities or structures that previously would not have been inundated), and/or exacerbate existing flooding problems as compared to existing conditions (e.g., by increasing the severity or frequency of flooding relative to pre-project conditions). Therefore it is unlikely that the project would substantially displace or redirect flood flows as compared to existing conditions and the impact would be less than significant.

i) **Less than Significant.** According to maps compiled by the Association of Bay Area Governments (ABAG), the project site is not located in an inundation area for the Stevens Creek Reservoir Dam, Lexington Dam, or Anderson Dam under a catastrophic failure event (ABAG, 2014). Therefore the potential risk of loss, injury, or death from flooding of the project site as a result of failure of a dam or levee would be less than significant.

As discussed above, the project site is within the 100-year flood hazard area because existing levees surrounding the area are not FEMA-accredited for flood protection. Flooding hazards are expected to increase in coastal areas over the next 50 years as a result of anticipated sea level rise caused by global warming. It is widely believed that higher global temperatures will lead to the melting of polar ice and the thermal expansion of water (water expands as it warms), which in turn will cause sea levels to rise. According to maps compiled by the San Francisco Bay Conservation and Development Commission (BCDC), a projected sea-level rise of 16 inches by mid-century would inundate large areas around the Bay perimeter, including the project area (BCDC, 2011). Numerous ongoing studies and reports address flooding risks in the South San Francisco Bay area, including the Sunnyvale East and West Channels project mentioned above, the U.S. Army Corps of Engineers South San Francisco Bay Shoreline Study, and the San Francisquito Creek Levee Project. These studies assume a sea level rise of 24 to 26 inches over the next 50 years for planning and design of flood control improvements (Carollo/HDR, 2013).

Construction of the levee improvements, floodwalls, and channels proposed by the Sunnyvale East and West Channels project in 2015/2016 would alleviate most, but not all, of the 100-year fluvial flooding hazard at the WPCP. Additional flood control improvements are expected to be incorporated into the WPCP master planning effort that is underway, and would include the construction of a coastal levee that would initially provide protection for tidal flooding. These levee improvements would also be designed to be modified to protect the WPCP against sea level rise. The proposed levee improvements are consistent with the initial alignment selected for the South San Francisco Bay Shoreline Study. In addition to the coastal levee improvements, additional improvements would be required (i.e., grade changes to maintenance access roads, flood barrier along Borregas Avenue) to protect the WPCP against the impacts of tidal flooding. These flood improvements would meet the intent of Chapter 16.62 of the City of Sunnyvale's Municipal Code.

The project components consist primarily of the screening facility, influent pump station, grit and screenings handling building, primary sedimentation tanks, and associated electrical and utility structures; there are no habitable structures for human occupancy, and

the number of permanent employees at the WPCP would not change with implementation of the project. For this reason, the potential for the project to expose people to a significant risk of injury or death is considered low. Community emergency warning systems would continue to provide sufficient advance notification for WPCP staff if evacuation were needed in the event of a flood.

The Project would not alter the exposure of people or structures to flooding hazards relative to existing conditions, and would replace the existing primary treatment facilities with facilities of improved structural integrity (as described in section h), above). The construction of the Sunnyvale East and West Channels project would further reduce the risk of loss associated with flooding at the site, although some degree of tidal flooding risk would remain until the WPCP Master Plan flood control improvements described earlier are approved and implemented. While it is possible that some degree of flooding could occur, the risk of loss of life or significant damage to structures would be lower than currently exists at the site given the improved structural integrity of the facilities and the Sunnyvale East and West Channels project. Therefore, this impact would be less than significant.

j) **No Impact.** The WPCP site is not within a designated tsunami inundation area (California Emergency Management Agency, 2009). The influence of an ocean-borne tsunami wave would dissipate prior to reaching the project site because of the distance from the Pacific Ocean at the Golden Gate to southern portion of San Francisco Bay. A seiche is caused by oscillation of the surface of an enclosed body of water, such as a reservoir, as a result of an earthquake or large wind event. Seiche events have not been documented in San Francisco Bay, which is partially enclosed, with outlets to San Pablo Bay and the Pacific Ocean. The project site is relatively flat and not subject to mudflows. Therefore, there is no impact associated with these hazards.

Cumulative Impacts

The cumulative analysis considers the relevant past, present, and probable future projects listed in Table 5 with regards to the cumulative geographic area. The geographic area for the analysis of cumulative hydrology and water quality impacts is the downstream portion of the Moffett Channel watershed within the City, particularly the urbanized northern portion of the watershed in the vicinity of the project, which drains into the southern portions of San Francisco Bay. Of most relevance, the ongoing Sunnyvale WPCP improvements and the Sunnyvale East and West Channels project are both adjacent to the proposed project site and construction would occur at the same time as the proposed project.

Concurrent construction of the project and other projects in the cumulative geographic area could result in increased erosion of exposed soils during land disturbing activities and subsequent sedimentation, which could have a cumulative effect on the water quality of receiving waters. Also, any inadvertent release of fuels or other hazardous materials during concurrent construction of projects could affect the water quality in the stream channels or storm drains that eventually flow into San Francisco Bay. As described under a,f), above, all waters encountered or used

within the main plant site during construction (including construction dewatering, stormwater and water used as part of dust control) would be managed by and discharged to the WPCP storm drainage system, which is routed to the headworks for treatment and subsequently discharged as per the City's existing NPDES permit, which incorporates discharge limits for listed pollutants and constituents. Adherence to the requirements of the City's existing NPDES permit would reduce potential cumulative impacts associated with stormwater runoff and water quality associated with construction of the project.

Operation of the project would not represent a substantial land use change within the watershed compared to current conditions at the site and in the surrounding area. The project site is currently paved with impervious surfaces and storm runoff generated at the project site would be similar to the existing runoff onsite. Stormwater runoff would continue to be managed in a manner similar to existing conditions. The NPDES discharge requirements, established by the RWQCB, are themselves measures based on consideration of cumulative effect. Although other projects listed in Table 5 that are located along the waterfront or within the watershed could also involve similar activities that could affect water quality in receiving waters, the project's contribution to this cumulative impact would not be cumulatively considerable given compliance with existing regulations.

Given the project design features that address hydrologic and water quality issues, the project would not be expected to make a considerable contribution toward any cumulative water quality or hydrology related impacts and there would be no cumulative impact associated with the project. No mitigation is required.

References

Association of Bay Area Governments (ABAG), 2014. Dam failure inundation hazard map for Sunnyvale. Available at: http://www.abag.ca.gov/bayarea/eqmaps/dfpickc.html. Accessed June 30, 2014.

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Carollo/HDR, 2013. City of Sunnyvale Master Plan and Primary Treatment Design Technical Memorandum, Hydrology Report: Master Plan, Final Draft, November 2013.

Federal Emergency Management Agency (FEMA), 2014. National Flood Hazard Layer Web Map Service for Google Earth. Updated June 24, 2013.

Federal Emergency Management Agency (FEMA), 2009. Flood Insurance Rate Map, Santa Clara County, California and Incorporated Areas. Panel 45 of 830, Map Number 06085C0045H, May 18, 2009.

Fugro Consultants, Inc, 2014. Geotechnical study master plan and facilities upgrade project water pollution control plant Sunnyvale, California. Fugro Project No. 04.72130065. April 2014.

4.10 Land Use and Land Use Planning

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
10.	**LAND USE AND LAND USE PLANNING — Would the project:**				
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion

a) **No Impact**. The project site is within the WPCP and an adjacent drainage channel. Nearby areas include the SMaRT Station, former landfill areas, trails, and wetlands; industrial and commercial development is located 500 feet or more from the site. The proposed facilities would be consistent with existing uses at the WPCP. No project component would physically divide an established community; therefore, there would be no impact.

b) **Less than Significant.** Table 4 is Section 2.6 identifies the agencies with potential jurisdiction over the project. As described in *Biological Resources,* the drainage channel is likely to be considered waters of the U.S. and waters of the state, in which case the proposed filling of the channel falls under the jurisdiction of the U.S. Army Corps of Engineers and Regional Water Quality Control Board, and potentially the California Department of Fish and Wildlife. A utility corridor along the project site's northern boundary, containing the east-west segment of the proposed 60-inch PE pipeline, may be partially within the jurisdiction of the Bay Conservation and Development Commission (BCDC). The City has submitted or will submit permit applications to these agencies and will comply with the terms and conditions of any permits or agreements issued if it is determined that project activity is within BCDC jurisdiction. Complying with permit/approval conditions would eliminate any potential conflicts with the Bay Plan (administered by BCDC) or regulations implementing the Clean Water Act. The project would not obviously conflict with environmental policies in the City of Sunnyvale's General Plan and would, in fact, implement City (as well as state and federal) policies related to the continued provision of reliable wastewater treatment. Therefore, implementation of the project would not conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

c) **No Impact.** The project site is not within the boundaries of the Santa Clara Valley Habitat Conservation Plan and Natural Community Conservation Plan study area (Santa Clara Valley Habitat Authority, 2012; California Department of Fish and Wildlife, 2014); therefore, the project would not conflict with any applicable habitat conservation plan or natural community conservation plan affecting the area.

Cumulative Impacts

The geographic scope for potential cumulative land use impacts encompasses the main plant and adjacent areas. The other cumulative projects within this geographic scope include the ongoing WPCP improvements at the main plant, downstream portions of the Sunnyvale East and West Channels project, and the trail paving that could occur along the Sunnyvale Channels as part of a joint use agreement between the City of Sunnyvale and SVCWD. As discussed above, construction of the project could have a less-than-significant effect regarding conflicts with applicable land use plans, policies, and regulations. The identified cumulative projects would also be required to comply with applicable land use plans, policies, and regulations adopted for the purpose of minimizing an environmental effect. Accordingly, no significant cumulative impact related to conflicts with applicable plans, policies, and regulations would result from the cumulative scenario to which the proposed project and other cumulative projects would contribute.

References

California Department of Fish and Wildlife (CDFW), 2014. [Map] California Regional Conservation Plans. March.

Santa Clara Valley Habitat Agency (SCVHA), 2012. Figure 2-5, Private Development Areas Subject to the Plan, in *Final Santa Clara Valley Habitat Plan*. August.

4.11 Mineral Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
11. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

a-b) **No Impact.** There are no known mineral resources within the project site, and no operational mineral resource recovery sites at the project site or in the vicinity. The site is classified as MRZ-1 by the California State Mining and Geology Board, meaning that no mineral resources of significance occur in the area (Kohler-Antablin, 1996). Further, the City of Sunnyvale General Plan does not delineate any mineral resource recovery site in the project vicinity. Therefore, the project would not result in any impacts on mineral resources because it would not result in the loss of availability of a known mineral resource that would be of value to the region or the state, or local area.

Cumulative Impacts

Because the project would have no impact on mineral resources, it would not contribute to any potential cumulative impacts on mineral resources.

References

Kohler-Antablin, S., 1996. Mountain View Quadrangle, Plate 5 of 29, in *Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region*. DMG Open-File Report 96-03.

4.12 Noise

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
12. NOISE — Would the project:				
a) Result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☒	☐
f) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a) **Less than Significant with Mitigation.** As the project does not introduce any noise sensitive land uses, the following discussion focuses primarily on the project's impact on existing sensitive receptors. Applicable noise regulations, existing setting, and impacts associated with the construction and operation of the proposed project are provided below.

Local Noise Ordinances and Guidelines

The City of Sunnyvale General Plan contains guidelines for determining the compatibility of various land uses with different noise environments (City of Sunnyvale, 2011). For residential uses, an exterior noise environment of less than 60 dBA[18] Ldn[19] or CNEL[20] is considered "normally acceptable" while a noise environment of 60 to 75 dBA Ldn or CNEL is considered "conditionally acceptable." For neighborhood parks, the General Plan guidelines indicate that an exterior noise environment of less than 65 dBA Ldn or CNEL is considered "normally acceptable," between 65 dBA and 80 dBA Ldn or CNEL is considered "conditionally acceptable," and 80 dBA or greater is considered

[18] A-weighted decibels. Decibels are the unit of measure used to describe the loudness of sound. When sound is measured by a sound meter, the meter is usually fitted with a filter to better mimic the human ear; the A-weighting filter is commonly used when measuring environmental noise.

[19] Day-night average sound level, which is the average noise exposure over a 24-hour period.

[20] Community Noise Equivalent Level, which applies weighting factors to the evening and nighttime noise levels of the day-night average sound level.

"unacceptable." In addition, per General Plan standards, a noise increase of 3 to 5 dBA Ldn or CNEL (depending on the ambient noise environment and land use compatibility standards) would be considered a significant noise increase.

The City Municipal Code sets noise standards for construction (Title 16), and operation of equipment and maintenance (Title 19), as follows:

> **16.08.030. Hours of construction—Time and noise limitations.** Construction activity shall be permitted between the hours of 7:00 a.m. and 6:00 p.m. daily Monday through Friday. Construction on Saturdays shall be limited to the hours between 8:00 a.m. and 5:00 p.m. There shall be no construction activity on Sunday or national holidays when city offices are closed. As an exception, where emergency conditions exist, construction activity may be permitted at any hour or day of the week. Such emergencies shall be completed as rapidly as possible to prevent any disruption to other properties.
>
> Where additional construction activity will not be a nuisance to surrounding properties, based on location and type of construction, a waiver may be granted to allow hours of construction other than as stated in this section. (Ord. 2930-10 §2).
>
> **19.42.030. Noise or sound level. (Not for construction activities)**
>
> (a) Operational noise shall not exceed 75 dBA at any point on the property line of the premises upon which the noise or sound is generated or produced; provided, however, that the noise or sound level shall not exceed 50 dBA during nighttime or 60 dBA during daytime hours at any point on adjacent residentially zoned property. If the noise occurs during nighttime hours and the enforcing officer has determined that the noise involves a steady, audible tone such as a whine, screech or hum, or is a staccato or intermittent noise (e.g., hammering) or includes music or speech, the allowable noise or sound level shall not exceed 45 dBA.
>
> (b) Powered equipment used on a temporary, occasional or infrequent basis which produces a noise greater than the applicable operational noise limit set forth in subsection (a) shall be used only during daytime hours when used adjacent to a property with a residential zoning district. Powered equipment used on other than a temporary, occasional or infrequent basis shall comply with the operational noise requirements. For the purpose of this section, powered equipment does not include leaf blowers. Construction activity regulated by Title 16 of this code shall not be governed by this section.
>
> (c) It is unlawful for any person to make or allow to be made a nighttime delivery to a commercial or industrial establishment when the loading/unloading area of the establishment is adjacent to a property in a residential zoning district. Businesses legally operating at a specific location as of February 1, 1995, are exempt from this requirement.

Sensitive Receptors

Noise sensitive land uses include residences, schools, some recreational activities hospitals, libraries, and other places where peace and quiet are important to the activities at those land uses. Residential uses are considered most sensitive to community noise as people spend extended periods of time at home. Open space recreational uses such as

walking and jogging are less sensitive to noise as people spend relatively short periods of time engaging in those activities.

The immediate vicinity of the project area does not contain noise sensitive land uses; the project site is surrounded mostly by industrial and commercial uses. The nearest residential uses are the single family homes located immediately to the south of State Route 237 (SR 237) and are at least 0.6 mile from the project site. A section of the Bay Trail runs along the northern and western boundary of the main plant. Other trails in the area traverse the closed landfills. The Sunnyvale Baylands Park is located approximately one mile to the east of the site. Impacts of project construction and operation are discussed below as they apply to the nearest residential land uses south of SR 237 and the open space recreation uses along the section of the Bay Trail that run adjacent to the western boundary of the project site.

Ambient Noise Levels

The noise environment at the nearest residences is influenced primarily by traffic on SR 237 and local roadways. In addition, operations of the San Jose Light Rail add to the noise levels at some of the residences along North Fair Oaks Avenue. A long term (24-hour) ambient noise measurement was taken adjacent to the residential development near the intersection of Fair Oaks Way and North Fair Oaks Avenue. The noise environment at this location is dominated by traffic on SR 237 and North Fair Oaks Avenue. Light rail activity along North Fair Oaks Avenue also adds to ambient noise levels. In addition, to characterize the existing noise levels closer to the project site, one short term noise measurement was conducted along the section of the Bay Trail that runs along the northwestern border of the main plant area. Located adjacent to an already established industrial area, existing noise at these recreational uses is influenced by operations at the Moffett Field Airbase to the west and the surrounding industrial uses including the WPCP. **Table 9** summarizes noise measurement results for both study locations.

TABLE 9
MEASURED NOISE LEVELS IN THE PROJECT AREA[a]

Location	Time Period	Noise Level	Noise Sources
ST-1. Along the Bay Trail near the northwestern corner of the main plant area	August 12, 2014 2:28 p.m. – 2:33 p.m.	5-minute result: Leq = 57 dBA	• Pump noise from the WPCP • Activity of Bay Trail users • Wind • Birds
LT-1.Adjacent to residences at the intersection of North Fair Avenue and Fair Oaks Way (nearest residential receptors)	August 11 – 12, 2014	24-hour result: Ldn = 60.5 dBA	• Traffic on SR 237 • Traffic on SR 237 offramp, Fair Oaks Way, and N. Fair Oaks Ave. • Light rail

[a] All noise levels measured in A-weighted decibels (dBA). Noise measurement data presented here using a Metrosonics dB-3080 sound level meter, calibrated prior to use.

Construction Noise Impact Analysis

Construction activity noise levels at and near the project site would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Site preparation, facility construction, and demolition and site restoration would be completed in approximately 51 months.

Construction-related trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. Construction related trucks would travel along the same haul routes currently used by trucks travelling to the Smart Station. **Table 10** shows typical noise levels produced by various types of construction equipment.

TABLE 10
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Noise Level (dB, Leq at 50 feet)
Truck (including Material Hauling and Water Trucks)	88
Air Compressor	78 - 81
Concrete Mixer (Truck)	79 - 85
Concrete Mixer (Pump)	81 - 82
Scraper	84 - 89
Jack Hammer	88 - 89
Dozer	82 - 85
Loader	79 - 85
Paver	77 - 89
Roller	74
Grader	85
Pile Driver – Impact	101
Pile Driver – Sonic	96
Generator	81
Backhoe	78 - 80
Excavator	81

SOURCE: FTA, 2006.

Noise impacts from construction generally result when construction activities occur during the noise-sensitive times of the day (early morning, evening, or nighttime hours), in areas immediately adjacent to noise sensitive receptors (primarily residential uses), or when construction noise lasts over extended periods of time. If noise from construction activities would conflict with the City of Sunnyvale Municipal Code Section 16.08.030 (Hours of Construction – Time and Noise Limitations), the impact would be considered significant. These time and noise limitations apply only to noise from construction activities at the site and not construction related mobile sources such as trucks traveling on roadways to reach the site.

Noise from construction activities generally attenuates at a rate of 6.0 to 7.5 dB per doubling of distance (Caltrans, 1998). Assuming an attenuation rate of 6 dB per doubling of distance, even maximum construction noise levels of 101 dBA at 50 feet during impact pile driving would attenuate to less than 65 dBA at the nearest residences located 0.6 miles from the project site. Noise from other construction equipment would attenuate to less than 65 dBA within 1,000 feet from the project site. Further, the elevated landfill area towards the southern boundary of the site would act as a physical barrier and provide additional attenuation of noise from the construction area. When a barrier blocks the line of sight between the highest point of a noise source and the receptor, noise is attenuated by 10 – 15 dBA, depending on the length of the barrier. Conservatively assuming an additional 10 dBA attenuation from the elevated landfill area, maximum construction noise levels during pile driving would attenuate to levels well below 60 dBA at the nearest residences and would not be audible over the existing noise environment dominated by traffic on SR 237. Though intermittent and temporary, noise from construction equipment, especially pile drivers, could be disruptive to users of the Bay Trail and landfill trails. This would be more of a nuisance impact than a noise exposure impact given the transient nature of trail use.

Project construction at the site would be limited to the hours specified in the Sunnyvale Municipal Code. However, at times when critical connections are to be made between the existing and new facilities, construction activities may need to occur outside the hours allowed in the Municipal Code. No extreme noise and vibration generating activities such as pile driving, trenching, jack hammering are proposed to take place during these hours. As discussed above, residential uses closest to the project site are not likely to be impacted by any evening and nighttime construction noise at the project site as it is expected to attenuate to levels below ambient noise levels at the receptors. Recreational, office and industrial uses surrounding the project site would not be impacted by any evening and nighttime construction as these uses are not occupied during nighttime hours. However, construction related material haul truck trips to and from the site could take place outside the hours specified in the Noise Ordinance to avoid congestion along the haul route, as trucks traveling to the Smart Station currently use the same haul route. As a result noise levels along these haul routes would be impacted, especially if truck trips take place during the more noise sensitive evening and nighttime hours and if haul routes travel through or adjacent to any residential areas. Implementation of Mitigation Measure NOI-1 would ensure that the impact from both on-site construction activities and construction related truck trips along haul routes would be less than significant to both residential and nearby recreational uses.

Mitigation Measure NOISE-1: The City shall require construction contractors to implement the following mitigation measures:

- Consistent with Section 16.08.030 of the Municipal Code, all noise generating construction activities at the project site shall be limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturdays. There shall be no construction activity

at the project site on Sundays and national holidays when city offices are closed. Any emergency construction activities that will need to take place outside the hours stated above shall be completed as expeditiously as possible to reduce the duration of the impact. No extreme noise generating activities at the project site shall take place outside the hours listed above.

- Any onsite construction activities that will need to take place outside the above mentioned hours will need prior approval from the City.
- Signs shall be posted at the construction site that include construction days and hours, a day and evening contact number for the job site, and a day and evening contact number for the City in the event of problems.
- All construction vehicles and equipment, fixed and mobile, shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Construction staging areas shall be located as far as practicable from existing recreational uses so as to cause minimal disruption to these activities.
- Construction traffic to and from the project site shall be routed via designated truck routes as far as possible. Designated truck routes shall not traverse through or adjacent to any residential areas and shall be required to use freeways to the extent possible. Preferred access to the site shall be from SR-237 through Caribbean Drive or North Mathilda Avenue.
- Prohibit unnecessary idling of internal combustion engines.

Operation

An increase in traffic noise of 3 dB or more (a level perceivable to most individuals; Caltrans, 1998) at a sensitive receptor location would be considered a significant impact. The proposed project would not change the number of employees at the Plant and additional daily truck trips to the plant would be negligible at 1 or 2 trips per day. Therefore the project's impact on noise levels along the surrounding roadway network would result in a less-than-significant impact.

Noise levels associated with the new facilities would be either similar to or less than the noise generated by existing facilities due to the use of newer equipment. Further, much of the noise generating equipment such as pumps and emergency backup generators would be housed within structures, which would further reduce the less-than-significant operational noise impact of the project.

b) **Less than Significant.** Vibration from construction equipment of the project would be perceptible in the immediate vicinity of the construction areas. Demolition and pavement removal as well as grading could at times produce substantial vibration. Ground borne vibration levels would be distinctly perceptible when equipment would be operated within approximately 25 feet of sensitive land uses. With the nearest sensitive land uses well over 3,000 feet away from the project site, the temporary impact of vibration and groundborne noise from construction equipment would be less than significant.

c) **Less than Significant.** As discussed under a), operation of the proposed facilities would not generate noise levels that would be considered significant and would not significantly add to the existing noise environment at the nearest noise sensitive land uses.

d) **Less than Significant with Mitigation.** As discussed under a) above, the project construction would lead to a temporary and intermittent increase in noise levels in and around the project site. However, as noise sensitive residential land uses are located about 0.6 miles away from the project site, the impact of project construction noise at these residences would be less than significant. Users of the Bay Trail may be temporarily affected by construction noise, but given the short duration of exposure for recreationists, implementation of Mitigation Measure NOISE-1 would reduce the impact to a less-than-significant level.

e) **Less than Significant.** Moffett Field is located approximately one mile to the west of the project site. However, based on the Santa Clara County Comprehensive Land Use Plan for Moffett Field (Santa Clara County Airport Land Use Commission, 2012), the project site is not located within the Noise Impact Zone (65 dB CNEL contour) for the airfield; hence, the proposed project would not be considered to expose people residing or working in the area to excessive noise levels from the airfield. This impact would be less than significant.

f) **No Impact.** The project site is not located in the vicinity of a private airstrip.

Cumulative Impacts

As discussed in the noise section, the project would result in noise impacts primarily during construction. The geographic scope for cumulative noise impacts is the area within which sensitive receptors adversely affected by noise from the proposed project could also be affected by noise from other projects such that the impact is exacerbated in terms of intensity or duration. Construction of the Sunnyvale East and West Channels project and the ongoing dredging of the WPCP oxidation ponds would occur concurrently with the proposed project. The cumulative construction noise impact of the project taking place during the same time period as these other projects would temporarily increase noise levels in the immediate vicinity of the project site but is not expected significantly affect noise levels at the residential receptors, located more than 3,000 feet away. Implementation of Mitigation Measure NOI-1 would further reduce this impact. Therefore, the cumulative noise impact of the proposed project in conjunction with other projects in the area would be considered less than significant.

References

Santa Clara County Airport Land Use Commission (ALUC), Comprehensive Land Use Plan for Moffett Airfield, November 2, 2012.

Caltrans, Technical Noise Supplement, 1998.

City of Sunnyvale, Sunnyvale General Plan, 2011.

Federal Transit Administration, 2006. Transit Noise and Vibration Impact Assessment, May 2006.

4.13 Population and Housing

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
13. POPULATION AND HOUSING — Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) **Less than Significant.** The project does not propose new homes or businesses and thus would not induce population growth directly.

The project would not induce growth indirectly because it would not increase the capacity of the primary treatment facility. The maximum hydraulic capacity of the *existing* primary tanks is 67.5 mgd (EOA, 2010). The WPCP has been operating since 1956. The primary treatment system (as well as other plant processes) was sized to accommodate flows and loads from water-intensive industries like canneries that have since been replaced by less water-intensive (hi tech) industries; consequently, current flows treated at the WPCP are lower than existing capacity as well as projected (2035) flows and loads, which were the basis for sizing the headworks and primary treatment facilities. The proposed primary sedimentation tanks are designed to accommodate peak hour flow of up to 58.5 mgd (Carollo, 2014). The City is currently preparing a Master Plan to provide a long-term plan for the renovation of the WPCP, to meet all regulatory and permit requirements, and to ensure reliable, cost-effective wastewater treatment services during the planning period. The Master Plan Environmental Impact Report, to be initiated in 2015, will address the potential for Master Plan improvements to affect population growth in the service area.

It is expected that the temporary construction workforce requirements could be met using labor in the south Bay Area and that construction employees would commute from within in this area rather than relocate from more distant cities and towns. Although some workers might temporarily relocate from other regions, any population increase due to this relocation would be minor. The number of such employees would be minute compared to the total population and the available housing stock in the south Bay Area; thus, it would not generate a substantial, unplanned population increase. The potential growth-inducing impact of project construction would be less than significant.

b, c) **No Impact.** There is no existing housing on the project site; therefore, the project would not displace existing housing or people, necessitating the construction of replacement housing elsewhere.

Cumulative Impacts

The geographic scope of potential cumulative population and housing impacts encompasses the City of Sunnyvale and the nearby vicinity. Potential project-specific population and housing impacts would be limited to the possibility of growth inducement related to the short-term relocation of construction workers. Project construction could overlap with that of a number of cumulative projects listed in Table 5. Construction of those projects could potentially induce growth to the south Bay Area due to short-term construction worker relocation. This could contribute to potential impacts on population and housing resulting from short-term construction worker relocation. However, the total number of construction workers seeking temporary relocation for employment is not anticipated to be substantial given the available construction workforce within commuting distance of Sunnyvale. Therefore, project construction, in conjunction with the other cumulative projects in the vicinity, would not induce substantial population growth, and there would be no significant cumulative impact on population and housing.

References

Carollo Engineers (Carollo), 2014. *City of Sunnyvale Primary Treatment Design: Design Information Memorandum No. 7 Primary Sedimentation Tanks: Final*. July 2014.

EOA, Inc., 2010. Sunnyvale WPCP Operation, Orientation, Maintenance and Safety Training Manual, Primary Sedimentation Basins, June 21, 2010.

4.14 Public Services

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
14. PUBLIC SERVICES — Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Discussion

a) **No Impact.** Impacts associated with the provision of government facilities or services can occur when a project increases demand for these facilities or services, usually through increasing the number of people in the same jurisdiction as the project, resulting in the need for additional or expanded facilities, the construction of which could cause significant environmental impacts. The project would not construct new residential units or businesses. The project would not increase the number of residents or school-aged children; and therefore, it would not result in the need for new or altered schools or parks. Construction activities associated with the project, requiring a maximum 38 workers, are not be expected to create additional demands for fire, police, school, or park facilities, and thus would not result in the need for new government facilities. The project would not induce population growth, and would not otherwise affect the ability of existing public facilities to achieve performance objectives. There would be no impact on the provision of the listed public services as a result of the project.

Cumulative Impacts

The geographic scope of cumulative impacts to public services is comprised of the service areas of the fire, police, and parks departments and other public facilities that serve the WPCP or the area surrounding the WPCP. However, the proposed project would not include or result in the need for additional public facilities, and thus the project would not contribute to any cumulative impact on these services.

4.15 Recreation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
15. RECREATION — Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion

a) **Less than Significant.** Physical deterioration of parks or recreation facilities could occur if a project results in population growth that increases the use of recreational facilities leading to deterioration of those facilities, or if a project displaces recreation uses such that use of other recreation facilities increases substantially and results in deterioration of those facilities.

The project does not build housing or otherwise result in local population growth that could contribute to an increased need for recreational facilities. Recreational facilities adjacent to the project area include the San Francisco Bay Trail and trails on the closed Sunnyvale Landfill. A parking area used by the public when accessing these trails is located adjacent to the southwest corner of the WPCP. This parking area is only accessible from Borregas Avenue and Carl Roads, and would remain open for public use during project construction. Truck trips for material hauling to/from the project site would increase traffic along Borregas Avenue, which may discourage public use of the parking area near the WPCP. Nearby parking with access to the San Francisco Bay Trail is available at Sunnyvale Baylands Park, approximately one mile southeast of the WPCP. The Baylands Park parking lots have over 300 parking spaces, while fewer than 20 spaces are available in the parking lot adjacent to the WPCP. Should trail users that currently park near the WPCP temporarily access trails via Baylands Park during construction, the increased use of trails and parking in that vicinity would be nominal and would not result in deterioration of trails or other park facilities. The potential impact of increased use of alternate trails and trail access would be less than significant.

b) **No Impact.** The project does not include the construction of recreational facilities, nor does it require expansion of existing recreational facilities, and would have no impact with regards to the construction or expansion of recreational facilities.

Cumulative Impacts

The geographic scope of cumulative impacts on recreation facilities would include all projects that may increase use of the same recreational facilities that would be affected by the proposed

project, i.e. the Sunnyvale Baylands Park and other access points to the San Francisco Bay Trail. Several of the residential and commercial developments listed in Table 5 could increase the number of users of these recreational facilities, while the Sunnyvale East and West Channels project could also displace users of the recreational parking area at the WPCP (and the trail itself), resulting in increased users of nearby facilities. Because project construction would be short-term and would, at most, displace fewer than 20 parking spaces available to trail users, the project would not result in a cumulatively considerable contribution to potential cumulative impacts on recreational facilities, if any would indeed exist. The cumulative impact would be less than significant.

4.16 Transportation and Traffic

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
16. TRANSPORTATION AND TRAFFIC — Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

Discussion

Transportation and Traffic Setting

The project site is in the City of Sunnyvale, in Santa Clara County. Regional access to the site is provided by State Route 237 (SR 237). In the area closest to the project site, SR 237 has six travel lanes and paved shoulders. According to the most recent data published by Caltrans, the average daily traffic volume on SR 237 in the vicinity of the project site is approximately 86,000 to 121,000 vehicles, with up to 11,300 vehicles during the peak traffic hour (Caltrans, 2014). Borregas Avenue, Caribbean Drive, and Carl Road provide local access to the project site. Borregas Avenue is a two lane roadway with paved shoulders. Caribbean Drive is a divided road with six travel lanes, three in each direction. Carl Road is a two lane roadway with paved shoulders used to access the main plant site and the adjacent SMaRT station. Carl Road is used by WPCP employees and visitors, waste haulers delivering waste from the City of Sunnyvale to the SMaRT station, and the public, who use a parking lot at the western end of Carl Road to access nearby trails.

Public transportation available in the project vicinity is provided by Valley Transportation Authority (bus service and light rail), which serves Santa Clara County. However, this service

does not operate on roads that directly access the project site. The nearest stops are both within 0.5 mile of the project site, on Caribbean Drive at Crossman Avenue and on Java Drive at Borregas Avenue (VTA, 2014).

a,b) **Less than Significant with Mitigation.**

***Operation*.** The proposed primary treatment facility would replace existing facilities, and would continue to be operated in largely the same manner as the existing facilities. No additional staff would be needed, so worker commute trips to the site would be the same. Truck trips for delivery of treatment chemicals would occur infrequently, as needed, and would have little impact on area roadways.

Transportation plans and programs that apply to the project vicinity include the Santa Clara Valley Transportation Authority (VTA) Congestion Management Plan (CMP) and the Sunnyvale General Plan. The VTA is responsible for maintaining the performance and standards of the CMP roadway system in Santa Clara County, which includes freeways, state highways, and local expressways. The CMP network roadway nearest to the project site is the eastern portion of Caribbean Drive. Legislation that created the CMP excludes certain types of traffic from a determination of conformance with CMP traffic LOS standards. Construction traffic is one of these exclusions; for this reason, traffic generated by construction would not conflict with the CMP and does not require LOS analysis. As discussed above, the project would not create additional traffic once operational. Therefore, the proposed project would not have an impact on CMP designated roadways, and the impact of the project on regional transportation planning in the area would be less than significant.

Construction. Project construction is estimated to last about 51 months. Construction activities would include daily vehicle trips generated by the arrival and departure of construction workers, as well as haul trucks carrying demolition debris, soil, and building materials. Construction of the project would not require any lane closures. Haul trucks would primarily use a combination of highways (e.g., SR 237) and the local streets identified above, accessing the site via a temporary construction access gate off of Carl Road, and would be travelling to and from other local points and/or regional locations.

Trucks would haul materials away from and to the site. Project construction would include:

1) Demolition of sludge dewatering ponds and site preparation (surcharging of the site);
2) Construction of the primary treatment and headworks facilities; and
3) Final demolition and site restoration.

Truck trips for hauling soil during site preparation would occur throughout the day, including during peak commute hours (between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m.). Table 2 (in Section 2, Project Description) shows the vehicle trip generation for these construction activities.

As presented in Section 2, the estimated maximum size of the construction workforce includes 38 full-time workers plus occasional engineer visits and supplies delivery. The estimated average crew size of 28 is not anticipated to exceed 42 round trips (84 one-way trips) from construction workers traveling to and from each work site on an average day, approximately 28 one-way trips during the peak hour.

The impact of construction truck traffic would be a temporary lessening of the capacities of local streets due to the slower movement and larger turning radii of trucks, which could affect both traffic and transit operations; however, this level of truck activity would not be sufficient to result in significant impacts to intersection operations or to transit service. The most intensive truck travel would occur during the initial demolition and site preparation phase, during which trucks would deliver 168,000 cubic yards of soil over an estimated 98 days, and remove demolition debris and 95,000 cubic yards of soil over an estimated 48 days. Haul trucks have a capacity of about 12 cubic yards. With truck trips spread out over an eleven hour work day (i.e., between 7:00 a.m. and 6:00 p.m.) there would be an estimated maximum of 167 one-way trips per day or up to 15 truck trips per hour during site preparation and surcharging. During the facility construction, a maximum of 167 one-way trips would also occur during the 12 busiest workdays, also averaging up to 15 truck trips per hour at that time. Throughout the remainder of the construction period, there would be a reduced flow of construction-related truck traffic into and out of the site, generally limited to trucks making occasional deliveries of material (e.g., site demolition would require a maximum of 26 truck trips per day, approximately three trips per hour).

Any construction traffic occurring on weekdays between 7:00 a.m. and 9:00 a.m., or between 4:00 p.m. and 6:00 p.m., would coincide with peak hour traffic and could impede traffic flow on local roadways (including Carl Road and Caribbean Drive). With implementation of **Mitigation Measures TRANS-1a** and **TRANS-1b**, this impact would be reduced to a less than significant level.

> **Mitigation Measure TRANS-1a:** As part of pre-construction submittals, the contractor(s) shall submit a truck route plan to the City of Sunnyvale Public Works Department for review and approval to help minimize impacts to adjacent roadways.
>
> **Mitigation Measure TRANS-1b:** To the extent possible, heavy truck movements shall be limited to the hours before 7:00 a.m., between 9:00 a.m. and 4:00 p.m., and after 6:00 p.m.

c) **No Impact.** Moffett Federal Airfield is approximately 1.75 miles west of the main plant. The Norman Y. Mineta San Jose International Airport is approximately 5 miles southeast of the main plant. The next nearest airport is the Palo Alto Airport, 6 miles northwest of the main plant. These distances are outside of the limits of established height restrictions for development in the vicinity of airports, described in Federal Aviation Administration regulations (CFR 14 Part 77 §77.17). New structures would be constructed within the

boundaries of the existing main plant. Therefore, the project would have no impact on air traffic patterns, nor would it result in any substantial air safety risks.

d) **Less than Significant.** The proposed project would not alter the design of existing roadways or introduce incompatible uses to the area. The site would continue to be used for wastewater treatment. However, it could cause temporary traffic safety hazards due to (1) conflicts where construction vehicles access a public right-of-way (Carl Road) from the project site or (2) increased truck traffic with their slower speeds and wider turning radii. Traffic safety hazards could also occur where delivery and haul trucks share the roadway with other vehicles. While the use of haul trucks could affect road conditions by increasing the rate of road wear, the roads leading to the project site are also used by trucks hauling waste and recyclable materials to the adjacent SMaRT station, located just east of the project site on Carl Road, and thus are designed to accommodate regular use by heavy haul trucks. As described a, b), above, the increase in daily traffic volumes resulting from construction traffic would not be substantial, and traffic would be scheduled to generally occur outside of peak hours; therefore, potential adverse traffic safety hazards on public roadways during construction would be less than significant.

e) **Less than Significant.** The proposed treatment facility would be constructed in the eastern portion of the main plant. Construction staging areas and activities would be onsite, with no expected roadway or land closures. One temporary construction access gate would be added to the main plant site, to the east of the current access gate (as shown on Figure 5). This gate would be accessible to emergency vehicles, and the project does not include any design features that would temporarily or permanently restrict emergency vehicles from the project site. The design of the facility would be reviewed and approved by the City's traffic engineer and fire department to ensure that the project's impact on emergency access would be less than significant.

f) **Less than Significant.** The nearest bicycle facilities are located along Caribbean Drive approximately 500 feet south of the main plant and along the San Francisco Bay Trail, north of and adjacent to the main plant (City of Sunnyvale, 2006). Project construction would not directly or indirectly eliminate existing or planned alternative transportation facilities, such as bicycle/pedestrian paths, bicycle lanes, us routes, and sidewalks. In addition, construction activities would not change policies or programs that support alternative transportation. Further, temporary increases in traffic volumes on area roadways would not substantially affect traffic flow and circulation, including that of public transit vehicles.

The project would not conflict with adopted policies, plans, or programs supporting alternative transportation. Given their limited scope, duration, and location within Sunnyvale, the construction-related activities associated with the proposed project would not conflict with the objectives and policies set forth in the Sunnyvale General Plan Land Use and Transportation Element. The project would not conflict with improvement plans

described in the City of Sunnyvale 2006 Bicycle Plan. The project would have a less-than-significant impact with regard to this criterion.

Cumulative Impacts

The geographic scope for potential cumulative impacts related to transportation and circulation encompasses local roads in the project vicinity. As described above in response to checklist question 16(a), construction of the project would result in a temporary increase in vehicle trips on local roads. Construction activities associated with the project would be expected to start in September 2015 and lasting about 51 months.

Of the cumulative projects listed in Table 5, only those that would use Carl Road, Caribbean Drive, and Borregas Avenue, and that have overlapping construction schedules could contribute to cumulative traffic impacts on these roadways; these projects include:

- Sunnyvale East and West Channels project (summers of 2015-2016);
- The paving of maintenance roads along the Sunnyvale Channels (beyond 2015), and
- The 549 Baltic Way NetApp Expansion (beyond 2015).

Of particular concern would be the Sunnyvale East and West Channels project, which would add trucks to Carl Road and Caribbean Drive. Construction activities associated with the Sunnyvale East and West Channels project would intermittently generate temporary increases in existing traffic volumes for materials delivery and construction employee access to segments of the Sunnyvale East and West Channels, including the segment adjacent to and west of the main plant site. In addition, flood wall construction would occur adjacent to the northeastern corner of the main plant. The Sunnyvale East and West Channels project would generate a maximum of 24 truck trips per hour along these roads in the project vicinity (SCVWD, 2013). During concurrent construction of these two projects, a maximum of 48 trucks per hour could use Carl Road and/or Caribbean Drive, which would result in increased traffic along both roadways. As described in checklist question 15(a), above, impacts of this construction truck traffic would be a temporary lessening of the capacities of local streets due to the slower movement and larger turning radii of trucks, which could affect traffic operations.

However, construction activity associated with the Sunnyvale East and West Channels project would be limited to summer months of 2015 and 2016. The Primary Facility Project would begin in September 2015. The greatest amount of daily truck traffic would occur during site preparation, between September 2015 and June 2016, when the Sunnyvale East and West Channels project construction is not underway. Given this scheduling, the level of truck traffic associated with the Sunnyvale East and West Channels project, and the implementation of Mitigation Measures **TRANS-1a** and **TRANS-1b**, the project would not substantially affect cumulative traffic volumes on local roadways and the project's cumulative contribution to this impact would be less than cumulatively considerable.

References

Caltrans, 2014. 2013 Average annual daily traffic for all vehicles on California State Highways. Accessed online at: http://traffic-counts.dot.ca.gov/.

Santa Clara Valley Water District (SCVWD), 2013. *Sunnyvale East and West Channels Flood Protection Project Draft Environmental Impact Report*. October 2013.

City of Sunnyvale, 2006. City of Sunnyvale 2006 Bicycle Plan.

Santa Clara Valley Transportation Authority (VTA), 2014. VTA Bus and Rail Map. Effective January 6, 2014. Accessed online at: http://www.vta.org/getting-around/maps/bus-rail-map.

4.17 Utilities and Service Systems

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
17.	**UTILITIES AND SERVICE SYSTEMS — Would the project:**				
a)	Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b)	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?	☐	☐	☐	☒
c)	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?	☐	☐	☐	☒
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e)	Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion

a) **No Impact.** The City proposes the Primary Treatment Facility project to replace aging infrastructure at the WPCP in order to continue its compliance with the waste discharge requirements set forth in the RWQCB Order R2-2009-0061, NPDES Permit No. CA0037621 (RWQCB, 2009), which sets forth the wastewater treatment requirements for the City of Sunnyvale WPCP and its sewage collection system. The project would not conflict with these requirements; therefore, there would be no impact.

b) **No Impact**. This criterion applies to projects that, due to their nature, increase the need for water or wastewater treatment or stormwater management. The project analyzed in this Initial Study is the construction of new wastewater treatment facilities, specifically the Primary Treatment Facility project at the City's WPCP. The impacts of the construction and operation of the project, and any measures to mitigate significant impacts, are addressed throughout this Initial Study.

c) **No Impact**. This criterion applies to projects that, due to their nature, increase the need for stormwater management facilities. The project analyzed in this Initial Study includes the construction of new stormwater drainage facilities within the main plant and modification of an adjacent drainage channel. Proposed storm drains would convey stormwater from the project site to the existing main plant drainage system. Stormwater

within the main plant is routed to the headworks for treatment. The project would also construct a box culvert at the base of an existing drainage channel, to allow the stormwater flow to remain uninterrupted by filling of the channel. The impacts of the construction and operation of the project, and any measures to mitigate significant impacts, are addressed throughout this Initial Study.

d) **No Impact.** Project construction activities would require approximately 230,000 gallons of utility water per month. The water supply would be tertiary-treated, disinfected effluent produced by the WPCP. The average dry weather flow (ADWF) discharged from the WPCP in 2006-2008 was 9.4 mgd (RWQCB, 2009). The utility water required for project construction would reduce the ADWF by less than 0.5 percent. The WPCP has adequate supplies to serve the project's construction water needs and no additional entitlements would be needed. There would be no impact on water service providers.

e) **No Impact.** The City is the wastewater treatment provider and the project would replace aging wastewater infrastructure at the City's WPCP. The project would not result in additional residences or businesses or increase the amount of wastewater requiring treatment at the WPCP. Therefore, the project would not affect the provider's ability to provide wastewater treatment services.

f) **Less than Significant.** Project construction would require the disposal or reuse of approximately 120,500 cubic yards of excavated soil and demolition debris (refer to Table 2, Project Description). Excavated soil that is not reused onsite would be disposed or reused offsite. Site investigation and sampling results, discussed in *Hazards and Hazardous Materials*, indicate that soil generated would meet the acceptance criteria for the Newby Island Landfill and the Altamont Landfill. As shown in **Table 11**, below, the remaining capacity at Newby Island Landfill is approximately 9,100,000 cubic yards. Remaining capacity of Altamont Landfill is approximately 8,800,000 cubic yards. Table 17-1 also includes additional landfills in the vicinity that could be used for disposal of soil or construction debris, if soil chemistry is acceptable to receiving landfill.

TABLE 11
LANDFILLS IN THE VICINITY OF THE PROJECT AREA

Landfill Name	Remaining Capacity (cubic yards)	Approximate Distance from Site
Zanker Road Class III Landfill	360,000	5 miles
Newby Island Sanitary Landfill	9,100,000	6.5 miles
Guadalupe Sanitary Landfill	11,055,000	20 miles
Corinda Los Trancos Landfill (Ox Mountain)	26,898,089	28 miles
Kirby Canyon Recycling and Disposal Facility	57,271,507	32 miles
Vasco Road Sanitary Landfill	9,870,704	36 miles
Altamont Landfill and Resource Recovery	8,800,000	39 miles

SOURCES: Zanker Road Resource Recovery, Inc., 2011; City of San Jose, 2011; CalRecycle 2014a; CalRecycle 2014b; CalRecycle 2014c; CalRecycle 2014d; Geosyntec, 2010.

The City of Sunnyvale requires that either construction and demolition (C&D) mixed material be hauled by the City's franchised waste hauler, Specialty Solid Waste & Recycling (Specialty), or that licensed independent recyclers haul recyclable material from construction/demolition sites (City of Sunnyvale, 2011a; City of Sunnyvale, 2013a). The City also leases space near the SMaRT Station to a private company that recycles concrete and asphalt (City of Sunnyvale, 2011b). If the mixed waste from construction sites is collected by Specialty, the construction and demolition loads are brought to the SMaRT Station where recyclable materials are extracted. The solid waste that remains after the materials recovery process are hauled from the SMaRT Station to the Kirby Canyon Recycling and Disposal Facility pursuant to a contract between the City of Sunnyvale and Waste Management of California (City of Sunnyvale, 2011b). Sunnyvale has contracted for disposal capacity (with a maximum of 4,123,310 tons) ending on December 31, 2021 (City of Sunnyvale, 1996). Kirby Canyon's remaining capacity is estimated to be approximately 57.2 million cubic yards, although its current permitted capacity is 36 million cubic yards (CalRecycle, 2014c).

A significant impact to landfill capacity would result if waste generated by the project were to exceed available capacity of local waste disposal facilities. As shown in Table 11, landfills in the area have adequate capacity to receive solid waste generated during project construction and demolition. Further, as multiple landfills are accessible to the project area, solid waste generated during construction could be disposed of at multiple facilities, thereby reducing the effect on the capacity of any individual facility.

g) **Less than Significant**. Federal regulations pertaining to nonhazardous solid waste contained in the Resource Conservation and Recovery Act, Subtitle D, identify state and local governments as the primary planning, regulating, and implementing entities for the management of nonhazardous solid waste. The U.S. Environmental Protection Agency (EPA) has promulgated some regulations pertaining to nonhazardous solid waste, largely addressing how disposal facilities should be designed and operated (U.S. EPA, 2011). Solid waste from the project would be sent to one of the landfills listed above, which are designed and operated in compliance with the federal regulations through designated local enforcement agencies which, in the project area include the County of Santa Clara Department of Environmental Health (for solid waste in Santa Clara County including landfills in the county and the SMaRT Station) and the City of San Jose (for Kirby Canyon Landfill).

With regard to diverting waste from disposal, the Integrated Waste Management Act of 1989 (Assembly Bill [AB] 39) requires each city's and county's Source Reduction and Recycling Element to include an implementation schedule to divert 50 percent of its solid waste from landfill disposal by January 1, 2000, through source reduction, recycling, and composting activities. The City is in compliance with AB 939 requirements. As of 2013, waste diversion for Sunnyvale was 66 percent (City of Sunnyvale, 2013b). The policies cited in a) above would ensure that C&D waste from project construction would not impair the City's ability to meet waste diversion goals.

As discussed in *Hazards and Hazardous Materials*, surcharge soil and other excavated soil removed from the project site would be analyzed for presence of hazardous materials or other materials to determine the appropriate disposal facility for the materials, in accordance with landfill criteria. Accordingly, the project would also be required to follow state and federal regulations for the disposal of solid wastes at a permitted disposal or recycling facility.

Cumulative Impacts

The geographic scope for potential cumulative utilities and service systems impacts consists of the project area and the service areas of regional service/utility providers. Most of the cumulative projects listed in Table 5, regardless of construction date, would dispose of construction debris at available landfills, which would contribute to potential impacts on available landfill capacity. As noted in Table 11 above, the landfills in the project vicinity have a combined remaining capacity of over 96 million cubic yards. The incremental effect of the project's daily and overall solid waste contribution to local landfills would be a very small proportion of the overall remaining landfill capacities. As a result, the project's contribution to a cumulative impact on landfill capacities would not be cumulatively considerable (less than significant).

References

California Regional Water Quality Control Board (RWQCB), 2009. *Order R2-2009-0061, NPDES Permit No. CA0037621: Sunnyvale Water Pollution Control Plant and its sewage system*. August 12, 2009.

CalRecycle, 2014a. Facility/Site Summary Details: Guadalupe Sanitary Landfill. Available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/43-AN-0015/Detail/. Accessed June 30, 2014.

CalRecycle, 2014b. Facility/Site Summary Details: Cornida Los Trancos Landfill (Ox Mtn). Available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/. Accessed June 30, 2014.

CalRecycle, 2014c. Facility/Site Summary Details: Kirby Canyon Recycl. And Disp. Facility. Available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/43-AN-0008/Detail/. Accessed June 30, 2014.

CalRecycle, 2014d. Facility/Site Summary Details: Vasco Road Sanitary Landfill. Available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0010/Detail/. Accessed June 30, 2014.

CalRecycle, 2014e. Jurisdiction Disposal by Facility, Disposal during 2013 for Sunnyvale. Available online at http://www.calrecycle.ca.gov/LGCentral/Reports/Viewer.aspx?P=OriginJurisdictionIDs%3d519%26ReportYear%3d2013%26ReportName%3dReportEDRSJurisDisposalByFacility. Accessed September 9, 2014.

CalRecycle, 2014f. Local Enforcement Agency (LEA) Central. Available online at http://www.calrecycle.ca.gov/lea/. Last updated February 11, 2014.

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City of Sunnyvale, Department of Public Works, 1996. *City of Sunnyvale Solid Waste Sub-element of the General Plan*, June 4, 1996.

City of Sunnyvale, 2011a. *City of Sunnyvale Design Guidelines for Solid Waste and Recycling Facilities: Commercial/Mixed-use/Industrial*. Revised June 3, 2011.

City of Sunnyvale, 2011b. Sunnyvale General Plan. Consolidated in July 2011.

City of Sunnyvale, 2013a. Demolition Permits. Revised December 2013.

City of Sunnyvale, 2013b. Discussion and Possible Action Regarding Zero Waste Strategic Plan. April 23, 2013.

Geosyntec, 2010. Joint Technical Document: Altamont Landfill and Resource Recovery Facility Volume I of III. Prepared for Waste Management of Alameda County, Inc. June 4, 2010.

U.S. Environmental Protection Agency (U.S. EPA), 2011. Chapter 2: Managing Nonhazardous Solid Waste, in *RCRA Orientation Manual 2011: Resource Conservation and Recovery Act*.

Zanker Road Resource Recovery, Inc., 2011. Application for Solid Waste Facility Permit/Waste Discharge Requirements: Zanker Road Resource Recovery Operation and Landfill. December 6, 2011.

4.18 Mandatory Findings of Significance

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
18.	**MANDATORY FINDINGS OF SIGNIFICANCE — Would the project:**				
a)	Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c)	Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a) **Less than Significant with Mitigation**. The discussion in Section 4, Evaluation of environmental effects, identifies potentially significant impacts of the project on the environment related to air quality, biological resources, cultural resources, noise, transportation and traffic, and utilities and service systems However, mitigation measures have been provided to address these potentially significant project-specific impacts. Implementation of the mitigation measures would reduce the impacts to a less-than-significant level. Impacts related to reducing the number or restricting the range of a rare or endangered plant or animal would be less than significant with mitigation.

b) **Less than Significant with Mitigation**. Section 15130 of the CEQA guidelines requires a reasonable analysis of the significant cumulative impacts to which a project could contribute. Cumulative impact refers to "two or more individual effects that, when considered together, are considerable or able to compound or increase other environmental impacts." The individual effects may be changes resulting from a single project or an increase in the number of environmental impacts. The cumulative impact is the change in the environment that results when the incremental impact of the project is added to closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects that take place over time (CEQA Guidelines Section 15355 [a][b]).

For the purposes of this initial study, the geographic context for the project's cumulative impact assessment is generally the WPCP vicinity, although an expanded geographic

context was considered for some topics. Recently approved and reasonably foreseeable projects and planning efforts in the vicinity of the project site are presented in Table 5.

Potential cumulative impacts are assessed in the relevant subsections of Section 4, Evaluation of Environmental Effects. However, for the reasons described in these topic areas, with implementation of mitigation measures to address potentially significant project-specific impacts, the project's contribution to all cumulative impacts on the environment would not be cumulatively considerable.

c) **Less than Significant with Mitigation.** The discussion in Section 4, Evaluation of Environmental Effects, identifies potentially significant impacts related to biological resources, transportation and traffic, cultural resources, air quality, and noise. Of these, impacts related to air quality, noise, and traffic could adversely affect humans. Mitigation measures have been provided in this initial study to reduce these potentially significant project-specific impacts to a less-than-significant level. No project-specific significant impacts were identified for the other environmental topics. Therefore, with implementation of the mitigation measures specified in Sections 4, the project would not result in substantial adverse effects, direct or indirect, on human beings.

APPENDIX A

Construction, Air Quality, and Greenhouse Gas Emissions Data

INPUT DATA FROM CAROLLO ENGINEERS

Phase 1: Site preparation (Sludge bed demolition, Overexcavation of existing pit and offhaul, import and fill/surcharge, and offhaul surcharge)

Construction Equipment	Number of Equipment	Hours Used/day	Number of Work Days	Total Hours
Excavator (188 hp)	2	6	4	41
Dozer (105 hp)	3	6	47	884
Grader (173 hp)	2	6	78	924
Roller (95 hp)	2	6	59	701
Hauling On-site (350 hp)	0	6	0	0
Hauling Off-site (350 hp)	13	6	146	11589
Concrete Deliveries (300 hp)	0	6	0	0
Paving Equipment (174 hp)	0	6	0	0
Water Truck (189 hp)	1	8	152	1216
Duration of construction				9 months
Total Workdays				252
Number of construction workers				23

Phase 2: Headworks and Primary Sedimentation Tanks (Lay ABC, Concrete work, Backfill, and AC paving)

Construction Equipment	Number of Equipment	Hours Used/day	Number of Work Days	Total Hours
Excavator (188 hp)	1	6	52	311
Dozer (105 hp)	1	6	65	378
Grader (173 hp)	1	6	21	126
Roller (95 hp)	1	6	19	104
Hauling On-site (350 hp)	2	6	24	225
Hauling Off-site (350 hp)	3	6	55	1120
Concrete Deliveries (300 hp)	5	6	16	459
Paving Equipment (174 hp)	1	6	9	49
Water Truck (189 hp)	1	8	131	1048
Duration of construction				33 months
Total Workdays				378
Number of construction workers				38

Phase 3: Demolition (Shore & excavate around existing structures, Building demolition & offhaul, Backfill, and Paving & site restoration)

Construction Equipment	Number of Equipment	Hours Used/day	Number of Work Days	Total Hours
Excavator (188 hp)	2	6	25	293
Dozer (105 hp)	1	6	14	75
Grader (173 hp)	1	6	6	30
Roller (95 hp)	1	6	12	66
Hauling On-site (350 hp)	2	6	36	385
Hauling Off-site (350 hp)	5	6	7	210
Concrete Deliveries (300 hp)	0	6	0	0
Paving Equipment (174 hp)	1	6	2	11
Water Truck (189 hp)	1	8	55	440
Duration of construction				9 months
Total Workdays				84
Number of construction workers				24

CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

Offroad Construction Equipment Emissions Factors

Equipment	Offroad HP Range	Equipment Emission Rates (lb/hour)			
		ROG	NOx	PM10	PM2.5
Excavator (188 hp)	176 - 250	0.056	0.769	0.024	0.023
Dozer (105 hp)	51 - 120	0.091	0.673	0.060	0.055
Grader (173 hp)	121 - 175	0.118	1.151	0.065	0.060
Roller (95 hp)	51 - 120	0.051	0.451	0.034	0.031
Hauling On-site (350 hp)	251 - 500	0.126	1.420	0.054	0.050
Hauling Off-site (350 hp)	251 - 500	0.126	1.420	0.054	0.050
Concrete Deliveries (300 hp)	251 - 500	0.126	1.420	0.054	0.050
Paving Equipment (174 hp)	121 - 175	0.056	0.806	0.027	0.025
Water Truck (189 hp)	176 - 250	0.088	0.931	0.040	0.037

Notes:
All emission rates were derived using the 2011 Offroad emissions inventory database. PM10 and PM2.5 emissions are based on PM emissions with PM10 and PM2.5 fractions applied to the PM EF (SCAQMD, 2006); PM = PM10;

PM2.5 = PM*0.92. ROG and TOG emissions are based on THC emissions with conversion factors recommended by CARB (2000). ROG = HC*1.26639; TOG = HC*1.4447

References:
CARB (California Air Resources Board), 2000.
SCAQMD (South Coast Air Quality Management District). 2006.

CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

On-Road Vehicle Emission Factors from EMFAC2011

Vehicle Type (calendar year)	Emission Factors			
	ROG	NOx	PM10*	PM2.5*
Light duty automobile (2015)				
Running Exhaust emissions (gms/mile)	0.10	0.12	0.05	0.02
Other Emissions (gms/veh/day)	2.94	1.14	0.02	0.02
Light duty truck (2015)				
Running Exhaust emissions (gms/mile)	0.30	0.33	0.05	0.02
Other Emissions (gms/veh/day)	6.32	2.09	0.03	0.03

Other emissions include starting and idling emoissions for Nox, PM10, PM2.5. Other emissions for ROG include idling and starting emissions, diurnal and hotsoak emissions as well as running and resting losses

*PM10 and PM2.5 emission factors include tire and break wear.
Vehicle emission factors were obtained from EMFAC2011 for the Bay Area.
Light duty gasoline truck = LDT1

TOTAL PROJECT EMISSIONS SUMMARY

	Emissions			
	ROG	NOx	PM10	PM2.5
Phase 1				
Construction equipment and material haul trips	1796.45	19591.85	815.07	749.86
Construction worker commute trips	197.89	167.35	25.12	11.15
Phase 2				
Construction equipment and material haul trips	394.35	4262.59	183.41	168.73
Construction worker commute trips	490.43	49.43	0.78	0.71
Phase 3				
Construction equipment and material haul trips	144.42	1603.60	66.13	60.84
Construction worker commute trips	68.83	184.45	110.27	127.71
TOTAL PROJECT EMISSIONS (lbs)	3092.37	25859.27	1200.77	1119.01
Average Daily Emissions (lbs/day)	**4.33**	**36.22**	**1.68**	**1.57**
Construction Equipment and Material Haul Trips Average (lbs/day)	**3.27**	**35.66**	**1.49**	**1.37**
Construction worker commute trips Average (lbs/day)	**1.06**	**0.56**	**0.19**	**0.20**

CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

Phase 1: Site preparation (Sludge bed demolition, Overexcavation of existing pit and offhaul, import and fill/surcharge, and offhaul surcharge)

Emissions Summary

	Emissions (pounds/phase)			
Emissions Source	ROG	NOx	PM10	PM2.5
Construction equipment and material haul trips	1796.45	19591.85	815.07	749.86
Construction worker commute trips	197.89	167.35	25.12	11.15
Total	1994.34	19759.19	840.19	761.01

Construction equipment & material haul trips

		Total Emissions (pounds)			
Equipment	Total Hours	ROG	NOx	PM10	PM2.5
Excavator (188 hp)	41	2.30	31.81	1.01	0.93
Dozer (105 hp)	884	80.20	595.26	53.29	49.03
Grader (173 hp)	924	108.75	1,063.50	59.80	55.01
Roller (95 hp)	701	36.01	315.76	23.53	21.65
Hauling On-site (350 hp)	0	0.00	0.00	0.00	0.00
Hauling Off-site (350 hp)	11,589	1,462.15	16,452.98	628.45	578.17
Concrete Deliveries (300 hp)	0	0.00	0.00	0.00	0.00
Paving Equipment (174 hp)	0	0.00	0.00	0.00	0.00
Water Truck (189 hp)	1,216	107.04	1,132.54	48.98	45.06
Total (pounds) =		1,796.45	19,591.85	815.07	749.86

Construction worker commute trips

Vehicle Type	Trips/phase	miles/trip	ROG	NOx	PM10	PM2.5
Light-Duty Auto						
Running Exhaust	1449	40	12.85	15.71	5.95	2.49
Other Emissions			9.38	3.62	0.06	0.06
Light-Duty Truck						
Running Exhaust	4,347	40	115.20	128.08	18.79	8.32
Other Emissions			60.45	19.95	0.31	0.29
Total Emissions for Phase 1 (pounds)			197.89	167.35	25.12	11.15

Notes:

Average daily emissions are assessed relative to the 252 workdays that would be associated with this phase.

Construction equipment use hours and vehicle trips data were provided by Carollo Engineers.

CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

Phase 2: Headworks and Primary Sedimentation Tanks (Lay ABC, Concrete work, Backfill, and AC paving)

Emissions Summary

Emissions Source	Emissions (pounds/phase)			
	ROG	NOx	PM10	PM2.5
Construction equipment and material haul trips	394.35	4262.59	183.41	168.73
Construction worker commute trips	490.43	49.43	0.78	0.71
Total	884.78	4312.02	184.18	169.45

Construction equipment & material haul trips

Equipment	Total Hours	Total Emissions (pounds)			
		ROG	NOx	PM10	PM2.5
Excavator (188 hp)	311	17.28	239.23	7.61	7.00
Dozer (105 hp)	378	34.28	254.44	22.78	20.96
Grader (173 hp)	126	14.80	144.74	8.14	7.49
Roller (95 hp)	104	5.35	46.90	3.50	3.22
Hauling On-site (350 hp)	225	28.35	319.03	12.19	11.21
Hauling Off-site (350 hp)	1,120	141.36	1,590.72	60.76	55.90
Concrete Deliveries (300 hp)	459	57.97	652.35	24.92	22.92
Paving Equipment (174 hp)	49	2.70	39.10	1.30	1.20
Water Truck (189 hp)	1,048	92.25	976.07	42.22	38.84
Total (pounds) =		394.35	4,262.59	183.41	168.73

Construction worker commute trips

Vehicle Type	Trips/phase	miles/trip	ROG	NOx	PM10	PM2.5
Light-Duty Auto						
Running Exhaust	3591	40	31.86	38.85	14.75	6.17
Other Emissions			23.26	8.97	0.15	0.14
Light-Duty Truck						
Running Exhaust	10,773	40	285.50	317.41	46.57	20.62
Other Emissions			149.82	49.43	0.78	0.71
Total Emissions for Phase 2 (pounds)			490.43	49.43	0.78	0.71

Notes:

Average daily emissions are assessed relative to the 378 workdays that would be associated with this phase.

Construction equipment use hours and vehicle trips data were provided by Carollo Engineers..

CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

Phase 3: Demolition (Shore & excavate around existing structures, Building demolition & offhaul, Backfill, and Paving & site restoration)

Emissions Summary

	Emissions (pounds/phase)			
Emissions Source	ROG	NOx	PM10	PM2.5
Construction equipment and material haul trips	144.42	1603.60	66.13	60.84
Construction worker commute trips	68.83	184.45	110.27	127.71
Total	213.25	1788.05	176.40	188.55

Construction equipment & material haul trips

		Total Emissions (pounds)			
Equipment	Total Hours	ROG	NOx	PM10	PM2.5
Excavator (188 hp)	293	16.31	225.73	7.18	6.61
Dozer (105 hp)	75	6.78	50.30	4.50	4.14
Grader (173 hp)	30	3.56	34.77	1.96	1.80
Roller (95 hp)	66	3.40	29.78	2.22	2.04
Hauling On-site (350 hp)	385	48.56	546.38	20.87	19.20
Hauling Off-site (350 hp)	210	26.50	298.15	11.39	10.48
Concrete Deliveries (300 hp)	0	0.00	0.00	0.00	0.00
Paving Equipment (174 hp)	11	0.60	8.69	0.29	0.27
Water Truck (189 hp)	440	38.73	409.80	17.72	16.31
Total (pounds) =		144.42	1,603.60	66.13	60.84

Construction worker commute trips

Vehicle Type	Trips/phase	miles/trip	ROG	NOx	PM10	PM2.5
Light-Duty Auto						
Running Exhaust	504	40	4.47	5.45	2.07	0.87
Other Emissions			3.26	127.51	101.55	123.85
Light-Duty Truck						
Running Exhaust	1,512	40	40.07	44.55	6.54	2.89
Other Emissions			21.03	6.94	0.11	0.10
Total Emissions for Phase 3 (pounds)			68.83	184.45	110.27	127.71

Notes:

Average daily emissions are assessed relative to the 84 workdays that would be associated with this component.

Construction equipment use hours and vehicle trips data were provided by Carollo Engineers..

CONSTRUCTION GHG EMISSIONS

GHG Emissions Factors for Diesel Exhaust - For On-Site Equipment

Fuel	CO_2 (g/gal)	N_2O (g/gal)	CH_4 (g/gal)
Diesel Fuel	10,210.00	0.26	0.58
Notes: Emission factors obtained from TCR, 2013, Tables 13.1 and 13.7.			

GHG Emissions Factors for Vehicle Exhaust - For Off-Site Vehicles

	Emission Factors (grams/mile)			Emission Factors (pounds/mile)		
Vehicle Type	CO_2	N_2O	CH_4	CO_2	N_2O	CH_4
Light-Duty Auto (gasoline) (2015)						
Running Exhaust (gms/mile)	339.16	0.09	0.05	0.75	0.00	0.00
Other Emissions (gms/veh/day)	463.52					
Light-Duty Truck (gasoline) (2015)	356.10					
Running Exhaust (gms/mile)	390.50	0.09	0.05	0.86	0.00	0.00
Other Emissions (gms/veh/day)	513.10					

Notes: CO2 on-road emission factors were derived using EMFAC2011; CH4 and N20 emission factors are from TRC, 2013, Table 13.4.

TOTAL PROJECT EMISSIONS

metric tons of CO_2e	
Phase 1	
Construction equipment and material haul trips	996.7
Construction worker commute trips	136.9
Phase 2	
Construction equipment and material haul trips	210.8
Construction worker commute trips	233.6
Phase 3	
Construction equipment and material haul trips	81.1
Construction worker commute trips	32.8
TOTAL PROJECT EMISSIONS	**1692.0**
Annual Average (over 4 years of construction)	423.0

CONSTRUCTION GHG EMISSIONS

Phase 1: Site preparation (Sludge bed demolition, Overexcavation of existing pit and offhaul, import and fill/surcharge, and offhaul surcharge)

Emissions Summary

Emissions Source	CO_2e (metric tons)
Construction equipment and material haul trips	996.7
Construction worker commute trips	136.9
Total	1,133.6

Construction equipment and material haul trips

			Diesel Fuel Consumption		Total Emissions (metric tons)			
Equipment	Offroad HP Range	Total Hours	gallons/ hour	gallons	CO_2	N_2O	CH_4	CO_2e
Excavator (188 hp)	188	41	4.32	178.5	1.82	0.00	0.00	1.84
Dozer (105 hp)	105	884	1.69	1,493.1	15.24	0.00	0.00	15.38
Grader (173 hp)	173	924	3.19	2,947.0	30.09	0.00	0.00	30.36
Roller (95 hp)	95	701	1.69	1,185.0	12.10	0.00	0.00	12.21
Hauling On-site (350 hp)	350	0	7.41	0.0	0.00	0.00	0.00	0.00
Hauling Off-site (350 hp)	350	11,589	7.41	85,907.0	877.11	0.02	0.05	885.08
Concrete Deliveries (300 hp)	300	0	7.41	0.0	0.00	0.00	0.00	0.00
Paving Equipment (174 hp)	174	0	3.96	0.0	0.00	0.00	0.00	0.00
Water Truck (189 hp)	189	1,216	4.13	5,028.1	51.34	0.00	0.00	51.80
			Total	96,738.6	987.7	0.0	0.1	996.7

Construction worker commute trips

		Miles per	Total Emissions (metric tons)			
Vehicle Type	Trips	Trip	CO_2	N_2O	CH_4	CO_2e
Light-Duty Auto	1449	40	58.97	0.02	0.01	64.01
Light-Duty Truck	4,347	40	67.90	0.02	0.01	72.93
			126.9	0.0	0.0	136.9

Notes: Construction equipment use hours and vehicle trips data were provided by Carollo Engineers.

CONSTRUCTION GHG EMISSIONS

Phase 2: Headworks and Primary Sedimentation Tanks (Lay ABC, Concrete work, Backfill, and AC paving)

Emissions Summary

Emissions Source	CO_2e (metric tons)
Construction equipment and material haul trips	210.81
Construction worker commute trips	233.63
Total	444.43

Construction equipment and material haul trips

Equipment	Offroad HP Range	Total Hours	Consumption		Total Emissions (metric tons)			
			gallons/ hour	gallons	CO_2	N_2O	CH_4	CO_2e
Excavator (188 hp)	176 to 250	311	4.32	1,342.5	13.71	0.00	0.00	13.83
Dozer (105 hp)	176 to 250	378	1.69	638.2	6.52	0.00	0.00	6.58
Grader (173 hp)	176 to 250	126	3.19	401.1	4.10	0.00	0.00	4.13
Roller (95 hp)	121 to 175	104	1.69	176.0	1.80	0.00	0.00	1.81
Hauling On-site (350 hp)	1 to 50	225	7.41	1,665.8	17.01	0.00	0.00	17.16
Hauling Off-site (350 hp)	251 to 500	1,120	7.41	8,305.7	84.80	0.00	0.00	85.57
Concrete Deliveries (300 hp)	121 to 175	459	7.41	3,406.1	34.78	0.00	0.00	35.09
Paving Equipment (174 hp)	51 to 120	49	3.96	192.2	1.96	0.00	0.00	1.98
Water Truck (189 hp)	176 to 250	1,048	4.13	4,333.4	44.24	0.00	0.00	44.65
			Total	20,461.0	208.9	0.0	0.0	210.8

Construction worker commute trips

Vehicle Type	Trips	Miles per Trip	Total Emissions (metric tons)			
			CO_2	N_2O	CH_4	CO_2e
Light-Duty Auto	3591	40	48.72	0.01	0.01	52.88
Light-Duty Truck	10,773	40	168.28	0.04	0.02	180.75
			217.0	0.1	0.0	233.6

Notes: Construction equipment use hours and vehicle trips data were provided by Carollo Engineers.

CONSTRUCTION GHG EMISSIONS

Phase 3: Demolition (Shore & excavate around existing structures, Building demolition & offhaul, Backfill, and Paving & site restoration)

Emissions Summary

Emissions Source	CO_2e (metric tons)
Construction equipment and material haul trips	81.11
Construction worker commute trips	32.79
Total	113.90

Construction equipment and material haul trips

Equipment	Offroad HP Range	Total Hours	Diesel Fuel Consumption		Total Emissions (metric tons)			
			gallons/ hour	gallons	CO_2	N_2O	CH_4	CO_2e
Excavator (188 hp)	176 to 250	293	4.32	1,266.7	12.93	0.00	0.00	13.05
Dozer (105 hp)	176 to 250	75	1.69	126.2	1.29	0.00	0.00	1.30
Grader (173 hp)	176 to 250	30	3.19	96.4	0.98	0.00	0.00	0.99
Roller (95 hp)	121 to 175	66	1.69	111.8	1.14	0.00	0.00	1.15
Hauling On-site (350 hp)	1 to 50	385	7.41	2,852.8	29.13	0.00	0.00	29.39
Hauling Off-site (350 hp)	251 to 500	210	7.41	1,556.7	15.89	0.00	0.00	16.04
Concrete Deliveries (300 hp)	121 to 175	0	7.41	0.0	0.00	0.00	0.00	0.00
Paving Equipment (174 hp)	51 to 120	11	3.96	42.7	0.44	0.00	0.00	0.44
Water Truck (189 hp)	176 to 250	440	4.13	1,819.4	18.58	0.00	0.00	18.74
			Total	7,872.6	80.4	0.0	0.0	81.1

Construction worker commute trips

Vehicle Type	Trips	Miles per Trip	Total Emissions (metric tons)			
			CO_2	N_2O	CH_4	CO_2e
Light-Duty Auto	504	40	6.84	0.00	0.00	7.42
Light-Duty Truck	1,512	40	23.62	0.01	0.00	25.37
			30.5	0.0	0.0	32.8

Notes: Construction equipment use hours and vehicle trips data were provided by Carollo Engineers.

Notes:

Equipment fuel consumption factors were derived using OFFROAD2011

*Global Warming Potential for CH4 = 21; GWP for N2O = 310.

Source: California Climate Action Registry (CCAR), 2009.

A.4 OFFROAD EMISSION INVENTORY DATABASE FACTORS

CalendarYear	AirBasin	Equipment Class	Equipment Type	HorsepowerBin	ScenBSFC	BSFC (gal/hr)	ScenNOx	NOx (lb/hr)	ScenPM	PM (lb/hr)	ScenHC	HC (lb/hr)	ScenActivity
2015	SF	Construction and Mining	Bore/Drill Rigs	50	43756.879	1.167	0.609	0.231	0.044	0.017	0.080	0.030	5279.761
2015	SF	Construction and Mining	Bore/Drill Rigs	120	267562.219	2.077	3.331	0.367	0.198	0.022	0.217	0.024	18134.568
2015	SF	Construction and Mining	Bore/Drill Rigs	175	312586.576	3.901	3.624	0.642	0.163	0.029	0.232	0.041	11283.120
2015	SF	Construction and Mining	Bore/Drill Rigs	250	441688.593	5.343	4.453	0.765	0.133	0.023	0.236	0.041	11639.570
2015	SF	Construction and Mining	Bore/Drill Rigs	500	492409.667	8.863	4.544	1.162	0.145	0.037	0.249	0.064	7822.423
2015	SF	Construction and Mining	Bore/Drill Rigs	750	679858.211	16.172	4.766	1.611	0.162	0.055	0.268	0.091	5918.989
2015	SF	Construction and Mining	Bore/Drill Rigs	1000	53419.140	23.856	0.480	3.048	0.009	0.060	0.014	0.092	315.281
2015	SF	Construction and Mining	Bore/Drill Rigs	9999	181029.895	69.241	2.318	12.595	0.057	0.309	0.080	0.434	368.112
2015	SF	Construction and Mining	Cranes	50	14269.620	0.664	0.237	0.157	0.023	0.015	0.067	0.045	3026.843
2015	SF	Construction and Mining	Cranes	120	340374.354	1.317	10.337	0.568	0.767	0.042	1.031	0.057	36374.708
2015	SF	Construction and Mining	Cranes	175	898349.756	2.214	22.339	0.782	1.208	0.042	1.734	0.061	57132.690
2015	SF	Construction and Mining	Cranes	250	1517466.705	3.237	34.666	1.050	1.583	0.048	2.414	0.073	66001.563
2015	SF	Construction and Mining	Cranes	500	2323621.340	5.002	42.757	1.307	1.769	0.054	2.741	0.084	65410.018
2015	SF	Construction and Mining	Cranes	750	612572.416	8.426	7.950	1.553	0.280	0.055	0.436	0.085	10235.738
2015	SF	Construction and Mining	Cranes	1000	143396.308	13.875	5.040	6.927	0.250	0.344	0.374	0.514	1455.068
2015	SF	Construction and Mining	Cranes	9999	11044.496	15.333	0.076	1.501	0.002	0.036	0.004	0.071	101.414
2015	SF	Construction and Mining	Crawler Tractors	50	43493.125	1.029	0.762	0.256	0.089	0.030	0.248	0.083	5948.923
2015	SF	Construction and Mining	Crawler Tractors	120	1927678.537	1.945	42.931	0.615	3.609	0.052	4.188	0.060	139541.713
2015	SF	Construction and Mining	Crawler Tractors	175	2097021.116	3.313	43.148	0.968	2.367	0.053	3.288	0.074	89123.133
2015	SF	Construction and Mining	Crawler Tractors	250	2115531.596	4.508	38.920	1.178	1.501	0.045	2.362	0.071	66077.978
2015	SF	Construction and Mining	Crawler Tractors	500	5671374.139	7.607	92.682	1.766	3.590	0.068	5.700	0.109	104963.448
2015	SF	Construction and Mining	Crawler Tractors	750	2206406.385	12.660	32.288	2.632	1.183	0.096	1.919	0.156	24537.426
2015	SF	Construction and Mining	Crawler Tractors	1000	292052.686	18.473	6.503	5.843	0.192	0.172	0.345	0.310	2225.938
2015	SF	Construction and Mining	Crawler Tractors	9999	154333.029	32.502	2.923	8.745	0.077	0.231	0.136	0.408	668.567
2015	SF	Construction and Mining	Excavators	50	1741299.276	0.785	23.098	0.148	1.760	0.011	3.232	0.021	312161.144
2015	SF	Construction and Mining	Excavators	120	2261462.691	1.597	34.443	0.346	2.563	0.026	2.876	0.029	199341.630
2015	SF	Construction and Mining	Excavators	175	4762983.119	2.884	64.064	0.551	3.162	0.027	4.534	0.039	232563.339
2015	SF	Construction and Mining	Excavators	250	6058828.492	4.317	76.010	0.769	2.418	0.024	4.336	0.044	197612.488
2015	SF	Construction and Mining	Excavators	500	10050512.853	6.466	97.311	0.889	3.156	0.029	5.806	0.053	218849.658
2015	SF	Construction and Mining	Excavators	750	909242.342	11.300	9.573	1.690	0.311	0.055	0.551	0.097	11329.228
2015	SF	Construction and Mining	Excavators	1000	102057.315	16.584	1.704	3.932	0.046	0.105	0.080	0.184	866.465
2015	SF	Construction and Mining	Excavators	9999	198872.215	30.669	2.180	4.775	0.057	0.124	0.105	0.231	913.001
2015	SF	Construction and Mining	Graders	50	11499.810	0.863	0.217	0.232	0.029	0.031	0.085	0.091	1876.011
2015	SF	Construction and Mining	Graders	120	310156.342	1.915	9.103	0.798	0.760	0.067	0.957	0.084	22803.971
2015	SF	Construction and Mining	Graders	175	2883128.408	3.191	73.247	1.151	4.118	0.065	5.915	0.093	127230.063
2015	SF	Construction and Mining	Graders	250	5010023.937	4.364	85.232	1.055	2.763	0.034	4.870	0.060	161638.315
2015	SF	Construction and Mining	Graders	500	1428336.632	6.200	15.942	0.983	0.618	0.038	1.155	0.071	32437.065
2015	SF	Construction and Mining	Graders	1000	13811.754	16.810	0.385	6.665	0.013	0.232	0.024	0.421	115.682
2015	SF	Construction and Mining	Graders	9999	194567.356	42.008	3.850	11.806	0.117	0.358	0.215	0.659	652.118
2015	SF	Construction and Mining	Off-Highway Tractors	50	719974.731	0.941	10.771	0.200	1.041	0.019	2.506	0.047	107758.925
2015	SF	Construction and Mining	Off-Highway Tractors	120	919597.150	1.690	16.630	0.434	1.355	0.035	1.528	0.040	76611.713
2015	SF	Construction and Mining	Off-Highway Tractors	175	784265.193	3.566	11.101	0.717	0.562	0.036	0.780	0.050	30967.836
2015	SF	Construction and Mining	Off-Highway Tractors	250	656630.956	4.791	10.949	1.135	0.394	0.041	0.655	0.068	19295.173
2015	SF	Construction and Mining	Off-Highway Tractors	500	1854692.784	7.517	20.936	1.205	0.737	0.042	1.265	0.073	34739.258
2015	SF	Construction and Mining	Off-Highway Tractors	750	465799.105	12.899	5.424	2.133	0.177	0.069	0.303	0.119	5084.506
2015	SF	Construction and Mining	Off-Highway Tractors	1000	13217.416	22.503	0.091	2.208	0.002	0.054	0.003	0.076	82.697
2015	SF	Construction and Mining	Off-Highway Tractors	9999	108361.746	39.734	1.861	9.692	0.060	0.311	0.106	0.553	383.976
2015	SF	Construction and Mining	Off-Highway Trucks	50	68905.818	0.620	1.121	0.143	0.117	0.015	0.264	0.034	15654.913
2015	SF	Construction and Mining	Off-Highway Trucks	120	84525.752	1.694	1.461	0.416	0.119	0.034	0.145	0.041	7026.361
2015	SF	Construction and Mining	Off-Highway Trucks	175	1633924.810	3.119	25.183	0.683	1.403	0.038	2.072	0.056	73758.905
2015	SF	Construction and Mining	Off-Highway Trucks	250	3352947.198	4.135	53.167	0.931	2.300	0.040	3.968	0.070	114169.806

A.4 OFFROAD EMISSION INVENTORY DATABASE FACTORS

CalendarYear	AirBasin	Equipment Class	Equipment Type	HorsepowerBin	ScenBSFC	BSFC (gal/hr)	ScenNOx	NOx (lb/hr)	ScenPM	PM (lb/hr)	ScenHC	HC (lb/hr)	ScenActivity
2015	SF	Construction and Mining	Off-Highway Trucks	500	14264451.402	7.413	192.323	1.420	7.346	0.054	13.496	0.100	270923.627
2015	SF	Construction and Mining	Off-Highway Trucks	750	5097947.131	13.026	77.967	2.830	3.172	0.115	5.680	0.206	55103.383
2015	SF	Construction and Mining	Off-Highway Trucks	1000	3533995.837	17.697	66.694	4.744	1.960	0.139	3.608	0.257	28116.665
2015	SF	Construction and Mining	Off-Highway Trucks	9999	5078621.528	35.009	87.411	8.559	2.728	0.267	5.231	0.512	20424.821
2015	SF	Construction and Mining	Other Construction Equipment	50	389918.361	0.914	5.815	0.194	0.526	0.018	1.131	0.038	60057.231
2015	SF	Construction and Mining	Other Construction Equipment	120	1218987.162	1.747	23.989	0.488	1.879	0.038	2.193	0.045	98269.030
2015	SF	Construction and Mining	Other Construction Equipment	175	664555.643	3.260	12.487	0.870	0.654	0.046	0.923	0.064	28703.285
2015	SF	Construction and Mining	Other Construction Equipment	250	852586.983	4.689	14.438	1.128	0.530	0.041	0.846	0.066	25597.963
2015	SF	Construction and Mining	Other Construction Equipment	500	2909032.406	7.717	38.293	1.443	1.410	0.053	2.325	0.088	53075.963
2015	SF	Construction and Mining	Other Construction Equipment	750	1134579.648	12.855	13.045	2.099	0.419	0.067	0.699	0.112	12426.918
2015	SF	Construction and Mining	Pavers	50	47750.172	0.926	0.724	0.199	0.074	0.020	0.197	0.054	7261.506
2015	SF	Construction and Mining	Pavers	120	462427.161	1.701	8.563	0.448	0.668	0.035	0.784	0.041	38265.260
2015	SF	Construction and Mining	Pavers	175	627501.206	3.396	10.430	0.802	0.523	0.040	0.762	0.059	26015.988
2015	SF	Construction and Mining	Pavers	250	423749.445	4.595	5.274	0.812	0.135	0.021	0.224	0.035	12983.930
2015	SF	Construction and Mining	Pavers	500	159631.188	6.954	1.413	0.875	0.047	0.029	0.071	0.044	3231.856
2015	SF	Construction and Mining	Pavers	750	18458.991	16.098	0.135	1.678	0.006	0.073	0.008	0.099	161.441
2015	SF	Construction and Mining	Paving Equipment	120	269997.195	1.631	4.966	0.426	0.380	0.033	0.441	0.038	23302.766
2015	SF	Construction and Mining	Paving Equipment	250	133359.001	3.959	1.910	0.806	0.064	0.027	0.104	0.044	4742.421
2015	SF	Construction and Mining	Paving Equipment	500	188023.598	6.175	2.637	1.230	0.095	0.044	0.151	0.070	4287.206
2015	SF	Construction and Mining	Rollers	50	979981.648	0.771	14.171	0.158	1.271	0.014	2.861	0.032	178986.625
2015	SF	Construction and Mining	Rollers	120	1531030.705	1.691	28.722	0.451	2.140	0.034	2.586	0.041	127478.093
2015	SF	Construction and Mining	Rollers	175	1583076.800	2.788	22.017	0.551	1.024	0.026	1.430	0.036	79960.681
2015	SF	Construction and Mining	Rollers	250	249954.125	4.146	3.692	0.870	0.128	0.030	0.215	0.051	8488.458
2015	SF	Construction and Mining	Rollers	500	157556.125	6.567	2.354	1.394	0.091	0.054	0.143	0.085	3377.911
2015	SF	Construction and Mining	Rollers	750	7690.234	10.106	0.115	2.151	0.006	0.103	0.009	0.162	107.137
2015	SF	Construction and Mining	Rough Terrain Forklifts	50	49913.758	1.094	0.699	0.217	0.058	0.018	0.132	0.041	6425.096
2015	SF	Construction and Mining	Rough Terrain Forklifts	120	4014881.659	2.004	51.543	0.365	2.979	0.021	3.361	0.024	282125.532
2015	SF	Construction and Mining	Rough Terrain Forklifts	175	738150.595	2.689	7.591	0.393	0.294	0.015	0.398	0.021	38648.756
2015	SF	Construction and Mining	Rough Terrain Forklifts	250	60672.024	4.334	0.448	0.455	0.011	0.011	0.021	0.021	1971.226
2015	SF	Construction and Mining	Rough Terrain Forklifts	500	25724.159	7.691	0.275	1.167	0.006	0.026	0.011	0.048	470.909
2015	SF	Construction and Mining	Rough Terrain Forklifts	750	4025.394	12.983	0.016	0.727	0.000	0.005	0.001	0.038	43.655
2015	SF	Construction and Mining	Rubber Tired Dozers	50	42951.423	0.931	0.786	0.242	0.104	0.032	0.290	0.089	6498.477
2015	SF	Construction and Mining	Rubber Tired Dozers	120	205897.884	1.688	5.779	0.673	0.517	0.060	0.615	0.072	17172.457
2015	SF	Construction and Mining	Rubber Tired Dozers	175	171676.795	3.067	5.060	1.284	0.290	0.074	0.410	0.104	7880.215
2015	SF	Construction and Mining	Rubber Tired Dozers	250	179095.051	4.338	4.267	1.468	0.211	0.072	0.322	0.111	5813.265
2015	SF	Construction and Mining	Rubber Tired Dozers	500	2050108.166	7.342	48.509	2.468	2.263	0.115	3.548	0.180	39317.025
2015	SF	Construction and Mining	Rubber Tired Dozers	750	241168.517	11.957	5.173	3.644	0.187	0.132	0.310	0.218	2839.746
2015	SF	Construction and Mining	Rubber Tired Loaders	50	135970.910	0.865	2.249	0.203	0.248	0.022	0.641	0.058	22124.545
2015	SF	Construction and Mining	Rubber Tired Loaders	120	3312470.991	1.590	70.639	0.482	6.106	0.042	7.124	0.049	293237.087
2015	SF	Construction and Mining	Rubber Tired Loaders	175	7862805.942	2.799	144.259	0.730	8.060	0.041	11.635	0.059	395499.649
2015	SF	Construction and Mining	Rubber Tired Loaders	250	10834488.234	3.831	175.579	0.882	5.994	0.030	10.960	0.055	398214.677
2015	SF	Construction and Mining	Rubber Tired Loaders	500	14109308.446	5.918	214.827	1.280	8.111	0.048	14.689	0.088	335681.111
2015	SF	Construction and Mining	Rubber Tired Loaders	750	2496693.935	10.873	35.273	2.182	1.387	0.086	2.526	0.156	32330.414
2015	SF	Construction and Mining	Rubber Tired Loaders	1000	726904.985	15.603	14.694	4.480	0.431	0.131	0.759	0.232	6559.348
2015	SF	Construction and Mining	Rubber Tired Loaders	9999	289054.213	28.247	5.594	7.766	0.163	0.226	0.307	0.426	1440.795
2015	SF	Construction and Mining	Scrapers	50	3117.871	0.997	0.057	0.259	0.008	0.035	0.023	0.103	440.165
2015	SF	Construction and Mining	Scrapers	120	142386.813	2.156	2.962	0.637	0.223	0.048	0.252	0.054	9298.012
2015	SF	Construction and Mining	Scrapers	175	1502633.895	4.202	34.542	1.372	1.846	0.073	2.625	0.104	50346.622
2015	SF	Construction and Mining	Scrapers	250	1725527.818	5.566	45.237	2.073	2.064	0.095	3.149	0.144	43649.233
2015	SF	Construction and Mining	Scrapers	500	15118324.387	9.516	276.049	2.468	11.149	0.100	17.702	0.158	223684.870

A.4 OFFROAD EMISSION INVENTORY DATABASE FACTORS

CalendarYear	AirBasin	Equipment Class	Equipment Type	HorsepowerBin	ScenBSFC	BSFC (gal/hr)	ScenNOx	NOx (lb/hr)	ScenPM	PM (lb/hr)	ScenHC	HC (lb/hr)	ScenActivity
2015	SF	Construction and Mining	Scrapers	750	6921498.168	14.101	100.455	2.907	3.774	0.109	6.170	0.179	69108.209
2015	SF	Construction and Mining	Scrapers	1000	108228.448	23.680	4.353	13.530	0.203	0.631	0.315	0.980	643.494
2015	SF	Construction and Mining	Scrapers	9999	393385.374	48.990	8.539	15.105	0.323	0.571	0.498	0.881	1130.583
2015	SF	Construction and Mining	Skid Steer Loaders	50	740978.228	0.925	8.836	0.157	0.533	0.009	1.052	0.019	112803.178
2015	SF	Construction and Mining	Skid Steer Loaders	120	3934695.822	1.344	45.016	0.218	2.601	0.013	2.869	0.014	412314.302
2015	SF	Construction and Mining	Skid Steer Loaders	175	26608.892	2.891	0.328	0.506	0.015	0.023	0.020	0.031	1295.854
2015	SF	Construction and Mining	Skid Steer Loaders	250	20455.690	3.759	0.233	0.608	0.009	0.022	0.014	0.035	766.124
2015	SF	Construction and Mining	Skid Steer Loaders	500	5615.497	5.130	0.053	0.691	0.002	0.024	0.003	0.043	154.118
2015	SF	Construction and Mining	Skid Steer Loaders	750	5923.609	10.092	0.043	1.037	0.002	0.043	0.002	0.053	82.643
2015	SF	Construction and Mining	Skid Steer Loaders	1000	9666.266	19.041	0.113	3.176	0.004	0.100	0.006	0.155	71.475
2015	SF	Construction and Mining	Surfacing Equipment	50	6821.306	0.627	0.095	0.125	0.007	0.010	0.015	0.020	1532.508
2015	SF	Construction and Mining	Surfacing Equipment	120	53517.782	1.378	0.866	0.317	0.061	0.022	0.073	0.027	5467.420
2015	SF	Construction and Mining	Surfacing Equipment	175	27774.917	2.348	0.479	0.575	0.023	0.028	0.033	0.040	1665.362
2015	SF	Construction and Mining	Surfacing Equipment	250	58900.082	3.397	0.896	0.734	0.026	0.022	0.045	0.037	2441.389
2015	SF	Construction and Mining	Surfacing Equipment	500	186292.903	5.612	2.195	0.939	0.071	0.030	0.112	0.048	4673.667
2015	SF	Construction and Mining	Surfacing Equipment	750	172526.722	9.577	1.704	1.344	0.054	0.043	0.076	0.060	2536.347
2015	SF	Construction and Mining	Surfacing Equipment	1000	28106.631	12.732	0.484	3.114	0.012	0.076	0.021	0.134	310.825
2015	SF	Construction and Mining	Surfacing Equipment	9999	9851.352	17.496	0.116	2.914	0.003	0.066	0.004	0.105	79.277
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	50	1466459.211	0.797	21.449	0.166	1.923	0.015	4.355	0.034	259105.939
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	120	23661798.620	1.592	380.899	0.364	29.813	0.028	33.053	0.032	2092452.379
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	175	4091997.509	2.726	59.754	0.565	3.019	0.029	4.303	0.041	211336.824
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	250	2369561.389	3.875	34.160	0.794	1.110	0.026	1.923	0.045	86093.935
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	500	3191110.357	6.102	41.639	1.131	1.428	0.039	2.469	0.067	73636.737
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	750	451602.391	10.829	5.735	1.954	0.208	0.071	0.348	0.119	5871.526
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	1000	76239.434	16.763	0.866	2.703	0.019	0.061	0.033	0.103	640.334
2015	SF	Construction and Mining	Tractors/Loaders/Backhoes	9999	1069447.006	38.247	17.141	8.708	0.528	0.268	0.875	0.445	3936.922
2015	SF	Construction and Mining	Trenchers	50	519319.919	1.155	7.543	0.238	0.688	0.022	1.452	0.046	63329.883
2015	SF	Construction and Mining	Trenchers	120	376385.181	2.147	8.052	0.653	0.630	0.051	0.757	0.061	24679.235
2015	SF	Construction and Mining	Trenchers	175	76789.775	3.703	1.785	1.223	0.092	0.063	0.134	0.092	2919.609
2015	SF	Construction and Mining	Trenchers	250	150416.920	5.683	2.935	1.575	0.117	0.063	0.187	0.100	3726.628
2015	SF	Construction and Mining	Trenchers	500	252708.003	9.253	3.347	1.741	0.124	0.065	0.197	0.102	3845.171
2015	SF	Construction and Mining	Trenchers	750	114603.064	16.174	0.556	1.114	0.018	0.036	0.032	0.064	997.657
2015	SF	Construction and Mining	Trenchers	1000	6768.313	22.330	0.267	12.520	0.012	0.569	0.019	0.894	42.676
2015	SF	Construction and Mining	Sweepers/Scrubbers	50	451670.266	0.932	7.036	0.206	0.745	0.022	1.821	0.053	68211.217
2015	SF	Construction and Mining	Sweepers/Scrubbers	120	698071.375	1.833	14.376	0.536	1.274	0.048	1.438	0.054	53617.923
2015	SF	Construction and Mining	Sweepers/Scrubbers	175	174126.885	3.763	4.538	1.393	0.250	0.077	0.362	0.111	6515.555
2015	SF	Construction and Mining	Sweepers/Scrubbers	250	92802.612	4.793	1.888	1.385	0.075	0.055	0.119	0.087	2726.389
2015	SF	Construction and Mining	Sweepers/Scrubbers	500	25890.715	7.121	0.470	1.837	0.020	0.080	0.030	0.117	511.881
2015	SF	Construction and Mining	Sweepers/Scrubbers	1000	18144.898	19.964	0.222	3.463	0.006	0.090	0.008	0.122	127.970

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	ROG_RUNEX (gms/mile)	ROG_IDLEX (gms/vehicle/day)	ROG_STREX (gms/vehicle/day)	ROG_DIURN (gms/vehicle/day)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.04	0.00	1.42	0.32
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.10	0.00	3.06	0.79
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.04	0.00	1.87	0.36
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.21	0.54	10.14	0.05
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.18	0.54	9.92	0.05
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	2.81	0.00	4.72	1.30
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.07	0.00	3.55	0.43
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.24	0.00	0.08	0.13
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.20	1.87	38.31	0.03
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	1.52	1.29	13.29	0.13
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.31	1.15	36.18	0.06
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	1.01	0.00	83.46	0.06
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	2.82	0.00	21.53	0.10

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	ROG_HTSK (gms/vehicle/day)	ROG_RUNLS (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.95	0.06
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	1.89	0.20
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	1.05	0.10
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	1.62	0.27
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	1.71	0.29
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.92	0.42
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	1.25	0.11
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.01	0.02
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	1.15	0.24
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	1.41	0.23
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	3.37	0.32
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	5.39	0.19
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	2.69	0.13

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	ROG_RESTL (gms/vehicle/day)	TOG_RUNEX (gms/mile)	TOG_IDLEX (gms/vehicle/day)	TOG_STREX (gms/vehicle/day)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.26	0.05	0.00	1.51
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.58	0.13	0.00	3.27
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.31	0.06	0.00	1.99
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.02	0.25	0.57	10.83
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.02	0.21	0.57	10.60
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.71	3.07	0.00	5.08
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.38	0.10	0.00	3.80
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.04	0.28	0.00	0.09
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.01	0.24	1.98	40.94
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.05	1.66	1.36	14.25
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.03	0.36	1.21	38.76
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.04	1.15	0.00	89.59
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.05	3.02	0.00	23.03

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	TOG_DIURN (gms/vehicle/day)	TOG_HTSK (gms/vehicle/day)	TOG_RUNLS (gms/mile)	TOG_RESTL (gms/vehicle/day)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.32	0.95	0.06	0.26
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.79	1.89	0.20	0.58
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.36	1.05	0.10	0.31
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.05	1.62	0.27	0.02
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.05	1.71	0.29	0.02
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	1.30	0.92	0.42	0.71
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.43	1.25	0.11	0.38
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.13	0.01	0.02	0.04
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.03	1.15	0.24	0.01
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.13	1.41	0.23	0.05
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.06	3.37	0.32	0.03
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.06	5.39	0.19	0.04
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.10	2.69	0.13	0.05

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	CO_RUNEX (gms/mile)	CO_IDLEX (gms/vehicle/day)	CO_STREX (gms/vehicle/day)	NOX_RUNEX (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	1.26	0.00	17.90	0.12
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	3.15	0.00	39.72	0.33
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	1.69	0.00	25.42	0.22
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	2.92	3.29	117.57	0.50
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	2.80	3.30	114.79	0.48
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	28.77	0.00	21.40	1.27
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	2.53	0.00	41.95	0.38
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	7.19	0.00	1.41	1.02
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	3.64	11.49	650.35	1.34
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	26.57	7.86	174.37	2.38
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	5.88	13.44	550.05	1.52
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	32.90	0.00	1755.34	5.78
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	26.94	0.00	279.81	4.25

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	NOX_IDLEX (gms/vehicle/day)	NOX_STREX (gms/vehicle/day)	CO2_RUNEX (gms/mile)	CO2_IDLEX (gms/vehicle/day)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.00	1.14	339.16	0.00
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.00	2.09	390.50	0.00
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.00	2.25	461.50	0.00
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.03	28.09	972.11	116.36
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.03	27.02	972.11	116.36
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.00	0.63	154.29	0.00
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.00	3.75	584.75	0.00
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.00	0.12	677.45	0.00
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.12	83.88	677.45	407.40
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.08	11.05	742.12	274.69
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.07	49.02	677.45	251.58
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.00	95.44	584.67	0.00
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.00	27.41	744.19	0.00

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	CO2_STREX (gms/vehicle/day)	CO2_RUNEX(Pavley I+LCFS) (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	463.52	289.85
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	513.10	345.38
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	629.31	415.12
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	856.28	947.81
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	875.70	947.81
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	91.96	150.43
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	784.95	539.75
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	3.93	660.51
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	1698.87	660.51
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	555.16	723.57
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	1243.29	660.51
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	1487.08	570.05
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	631.42	725.58

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	CO2_IDLEX(Pavley I+LCFS) (gms/vehicle/day)	CO2_STREX(Pavley I+LCFS) (gms/vehicle/day)	PM10_RUNEX (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.00	406.28	0.00
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.00	462.23	0.00
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.00	573.81	0.00
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	113.46	834.88	0.00
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	113.46	853.81	0.00
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.00	89.66	0.00
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.00	734.53	0.00
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.00	3.83	0.00
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	397.22	1656.40	0.00
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	267.83	541.28	0.01
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	245.29	1212.21	0.00
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.00	1449.90	0.00
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.00	615.64	0.01

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	PM10_IDLEX (gms/vehicle/day)	PM10_STREX (gms/vehicle/day)	PM10_PMTW (gms/mile)	PM10_PMBW (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.00	0.02	0.01	0.04
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.00	0.03	0.01	0.04
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.00	0.02	0.01	0.04
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.00	0.03	0.01	0.04
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.00	0.03	0.01	0.04
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.00	0.00	0.01	0.04
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.00	0.02	0.01	0.04
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.00	0.00	0.01	0.04
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.00	0.05	0.01	0.04
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.00	0.04	0.01	0.04
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.00	0.09	0.01	0.04
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.00	0.15	0.01	0.04
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.00	0.03	0.01	0.04

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	PM2_5_RUNEX (gms/mile)	PM2_5_IDLEX (gms/vehicle/day)	PM2_5_STREX (gms/vehicle/day)	PM2_5_PMTW (gms/mile)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.00	0.00	0.02	0.00
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.00	0.00	0.03	0.00
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.00	0.00	0.02	0.00
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.00	0.00	0.03	0.00
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.00	0.00	0.03	0.00
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.00	0.00	0.00	0.00
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.00	0.00	0.02	0.00
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.00	0.00	0.00	0.00
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.00	0.00	0.04	0.00
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.01	0.00	0.03	0.00
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.00	0.00	0.08	0.00
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.00	0.00	0.12	0.00
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.00	0.00	0.02	0.00

A.5 EMFAC2011 EMISSION RATES

Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2015
Season: Annual
Vehicle Classification: EMFAC2011 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day)	Trips (trips/day)	PM2_5_PMBW (gms/mile)	SOX_RUNEX (gms/mile)	SOX_IDLEX (gms/vehicle/day)	SOX_STREX (gms/vehicle/day)
San Francisco Bay Area	2015	Annual	LDA	GAS	Aggregated	Aggregated	2831527.51	98936833.57	17843073.24	0.02	0.00	0.00	0.00
San Francisco Bay Area	2015	Annual	LDT1	GAS	Aggregated	Aggregated	323244.36	11401684.39	1967641.53	0.02	0.00	0.00	0.01
San Francisco Bay Area	2015	Annual	LDT2	GAS	Aggregated	Aggregated	852320.37	31732283.69	5363375.96	0.02	0.00	0.00	0.01
San Francisco Bay Area	2015	Annual	LHD1	GAS	Aggregated	Aggregated	109992.08	4357357.60	1638718.05	0.02	0.01	0.00	0.01
San Francisco Bay Area	2015	Annual	LHD2	GAS	Aggregated	Aggregated	9718.15	382457.06	144785.88	0.02	0.01	0.00	0.01
San Francisco Bay Area	2015	Annual	MCY	GAS	Aggregated	Aggregated	137069.73	1199080.54	274112.05	0.02	0.00	0.00	0.01
San Francisco Bay Area	2015	Annual	MDV	GAS	Aggregated	Aggregated	608602.75	22555749.84	3791851.12	0.02	0.01	0.00	0.01
San Francisco Bay Area	2015	Annual	MH	GAS	Aggregated	Aggregated	20726.28	260058.83	2073.46	0.02	0.01	0.00	0.01
San Francisco Bay Area	2015	Annual	OBUS	GAS	Aggregated	Aggregated	3031.46	153132.63	138441.43	0.02	0.01	0.00	0.03
San Francisco Bay Area	2015	Annual	SBUS	GAS	Aggregated	Aggregated	568.73	25530.82	2274.92	0.02	0.01	0.00	0.03
San Francisco Bay Area	2015	Annual	T6TS	GAS	Aggregated	Aggregated	8454.96	392790.31	169166.79	0.02	0.01	0.00	0.02
San Francisco Bay Area	2015	Annual	T7IS	GAS	Aggregated	Aggregated	499.97	59746.68	10003.32	0.02	0.01	0.00	0.05
San Francisco Bay Area	2015	Annual	UBUS	GAS	Aggregated	Aggregated	460.22	60978.89	1840.87	0.02	0.01	0.00	0.02

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EMERGENCY GENERATOR TESTING EMISSIONS

Criteria Pollutant Emissions

Criteria Pollutant Emission Factors

Equipment	HP	Load Factor[b]	Tier 2 Emission Factors (g/bhp-hr)[c]				Tier 2 Emission Rates (lb/hr)				
			HC	NOx	PM[d]	CO	ROG	NOx	PM10	PM2.5	CO
Emergency Generator (2500 kW max) - at Switchgear building	3,353	0.74	0.030	5.180	0.150	0.230	0.208	28.331	0.820	0.759	1.258

Notes:

[b] Load factors are from CalEEMod.

[c] Emission factors are from Caterpillar specification sheets:

[d] Emission factor adjusted per MBUAPCD Rule 1010.

[e] ROG emission factor based on Offroad database for "other construction equipment". Nox emission factor is conservative; includes Nox+HC

1 kw = 1.340483 hp

A factor of 1.26639 was applied to THC to obtain ROG based on CARB (2000). A factor of 0.92 was applied to PM10 to obtain PM2.5 based on SCAQMD (2006).

Emergency Generator Criteria Pollutant Emissions

Equipment	Test Duration		Maximum Day (lbs/day)					Average Day (lbs/day)					Annual Emissions (tons/year)				
	hrs/test	test/yr	ROG	NOx	PM10	PM2.5	CO	ROG	NOx	PM10	PM2.5	CO	ROG	NOx	PM10	PM2.5	CO
Emergency Generator (2500 kW max) - at Switchgear building	4.2	12	0.87	118.04	3.42	3.16	5.24	0.03	3.88	0.11	0.10	0.17	0.01	0.71	0.02	0.02	0.03

It is assumed that each generator would be tested approximately 50 hours per year (4.2 hours per test, 12 tests per year).

GHG Emissions

GHG Emissions Factors for Diesel and Gasoline Exhaust

Fuel	CO_2 (g/gal)	N_2O (g/gal)	CH_4 (g/gal)
Diesel Fuel	10,210.00	0.26	0.58
Notes: Emission factors obtained from TCR, 2013, Tables 13.1 and 13.7.			

Emergency Generator GHG Emissions

	MaxHP	Hrs/yr	Diesel Fuel Consumption*		Total Emissions (metric tons per year)			
			gal/hr	gal/yr	CO_2	N_2O	CH_4	CO_2e
Emergency Generator (2500 kW max) - at Switchgear building	2,500	50.00	144.00	7,200.00	0.511	0.000	0.000	0.52

Assumed at 75 percent load with fan.

APPENDIX B
Biological Resources Data

TABLE 1
SPECIAL-STATUS AND LOCALLY SIGNIFICANT PLANT SPECIES
CONSIDERED BUT REJECTED FOR OCCURRENCE IN THE PROJECT AREA

Scientific Name	Common Name	No suitable habitat	Outside of the elevation range	Believed to be extirpated from Santa Clara County	Lack of associated species[1]	Widely distributed CNPS List 3 and 4 species
Acanthomintha lanceolata	Santa Clara thornmint					X
Androsace elongate ssp. *acuta*	California androsace					X
Acanthomintha duttonii	San Mateo thorn-mint		X			
Allium peninsulare var. *franciscanum*	Franciscan onion		X			
Arctostaphylos andersonii	Anderson's manzanita		X			
Arctostaphylos regismontana	Kings Mountain manzanita				X	
Astragalus tener var. *tener*	Alkali milk-vetch			X		
Atriplex depressa	Brittlescale	X				
Atriplex joaquiniana	San Joaquin spearscale			X		
Atriplex minuscula	Lesser saltscale	X				
Azolla microphylla	Mexican mosquito fern					X
Balsamorhiza macrolepis	Big-scale balsamroot		X			
Calandrinia breweri	Brewer's calandrinia					X
California macrophylla	Round-leaved filaree	X			X	
Calochortus umbellatus	Oakland star tulip					X
Calystegia collina ssp. *venusta*	South Coast Range morning-glory		X			
Campanula exigua	Chaparral harebell	X	X			
Chloropyron maritimum ssp. *palustris*	Point Reyes bird's beak			X		
Chorizanthe robusta var. *robusta*	Robust spineflower			X		
Cirsium fontinale var. *campylon*	Mt. Hamilton fountain thistle		X			
Cirsium fontinale var. *fontinale*	Crystal Springs fountain thistle	X			X	
Cirsium praeteriens	Lost thistle			X		
Clarkia breweri	Brewer's clarkia					X
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons		X			
Collinsia multicolor	San Francisco collinsia	X				
Cypripedium fasciculatum	Clustered lady's-slipper					X
Dirca occidentalis	Western leatherwood	X				
Dudleya abramsii ssp. *setchellii*	Santa Clara Valley dudleya		X			
Eriogonum argillosum	Clay buckwheat					X
Eriogonum nudum var. *decurrens*	Ben Lomond buckwheat					X
Eriogonum umbellatum var. *bahiiforme*	Bay buckwheat					X
Eriophyllum jepsonii	Jepson's wooly sunflower					X
Eriophyllum latilobum	San Mateo wooly sunflower	X			X	
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	X				

[1] The presence and percent cover of associated species for a given special-status plant is used as an indicator of the habitat suitability for that given special-status plant, and thus the presence of associated species indicates an increased likelihood that a special-status plant occurs (and lack of associated plants indicates a reduced likelihood of occurrence).

TABLE 1 (Continued)
SPECIAL-STATUS AND LOCALLY SIGNIFICANT PLANT SPECIES
CONSIDERED BUT REJECTED FOR OCCURRENCE IN THE PROJECT AREA

Scientific Name	Common Name	No suitable habitat	Outside of the elevation range	Believed to be extirpated from Santa Clara County	Lack of associated species[2]	Widely distributed CNPS List 3 and 4 species
Erysimum franciscanum	San Francisco wallflower					X
Fritillaria agrestis	Stinkbells					X
Fritillaria liliacea	Fragrant fritillary	X			X	
Galium andrewsii ssp. *gatense*	Phlox-leaf serpentine bedstraw					X
Helianthella castanea	Diablo helianthella	X				
Helianthus exilis	Serpentine sunflower					X
Hesperolinon congestum	Marin western flax	X			X	
Hoita strobilina	Loma Prieta hoita	X			X	
Iris longipetala	Coast iris					X
Isocoma menziesii var. diabolica	Satan's goldenbush	X				
Lasthenia conjugens	Contra Costa goldfields			X		
Legenere limosa	Legenere	X				
Leptosiphon acicularis	Bristly leptosiphon					X
Leptosiphon ambiguous	Serpentine leptosiphon					X
Leptosiphon grandiflorus	Large-flowered leptosiphon					X
Lessingia hololeuca	Woolly-headed lessingia	X			X	
Lessingia tenuis	Spring lessingia					X
Malacothrix phaeocarpa	Dusky-fruited malacothrix					X
Malacothamnus aboriginum	Indian Valley bush-mallow	X				
Malacothamnus hallii	Hall's bush-mallow	X				
Micropus amphibolus	Mt. Diablo cottonweed					X
Microserus sylvatica	Sylvan microseris					X
Monardella antonina ssp. antonina	San Antonio Hills monardella	X	X			
Navarretia cotulifolia	Cotula navarretia					X
Navarretia prostrata	Prostrate vernal pool navarretia					
Perideridia gairdneri ssp. gairdneri	Gairdner's yampah					X
Piperia leptopetala	Narrow-petaled rein orchid		X			
Piperia michaelii	Michael's rein orchid					X
Plagiobothrys chorisianus var. hickmanii	Hickman's popcorn flower					X
Plagiobothrys glaber	Hairless popcorn-flower			X		
Plagiobothrys myosotoides	Forget-me-not popcorn-flower	X	X			
Psilocarphus brevissimus var. multiflorus	Delta woolly-marbles					X
Senecio aphanactis	Rayless ragwort	X				
Sidalcea malachroides	Maple-leaved checkerbloom					X

[2] The presence and percent cover of associated species for a given special-status plant is used as an indicator of the habitat suitability for that given special-status plant, and thus the presence of associated species indicates an increased likelihood that a special-status plant occurs (and lack of associated plants indicates a reduced likelihood of occurrence).

TABLE 1 (Continued)
SPECIAL-STATUS AND LOCALLY SIGNIFICANT PLANT SPECIES
CONSIDERED BUT REJECTED FOR OCCURRENCE IN THE PROJECT AREA

Scientific Name	Common Name	No suitable habitat	Outside of the elevation range	Believed to be extirpated from Santa Clara County	Lack of associated species[2]	Widely distributed CNPS List 3 and 4 species
Streptanthus albidus ssp. albidus	Metcalf Canyon jewel-flower	X			X	
Streptanthus albidus ssp. peramoenus	Most-beautiful jewel-flower		X			
Stuckenia filiformis	Slender-leaved pondweed		X			
Suaeda californica	California seablite			X		
Trifolium depauperatum var. hydrophilum	Saline clover	X				
Tropidocarpum capparideum	Caper-fruited tropidocarpum	X		X		

TABLE 2
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT AREA

Name	*Status	Habitat	Potential for Occurrence in the Project Area
Federal or State Endangered, Threatened, or Candidate Species			
Green sturgeon (*Acipenser medirostris*)	FT, CSSC	Spawns in large river systems such as the Sacramento River; forages in nearshore oceanic waters, bays, and estuaries.	**Absent from Project Site.** Known to occur in the San Francisco Bay, though it apparently occurs only as a rare, nonbreeding visitor to the South Bay. There is no evidence that green sturgeon have ever spawned in any creeks within in the South Bay. Based on this species' preferences for streams having strong flow over large cobbles in deep pools, it is unlikely that South Bay tributaries historically provided suitable spawning habitat, and such habitat is absent now. Within the project vicinity, this species could forage in Guadalupe Slough and Moffett Channel, albeit infrequently and in low numbers, and it is unlikely to occur in the portion of Moffett Channel closest to the project site. Due to a lack of connectivity with tidal habitats, the southeastern channel does not provide suitable habitat, and this species is thus absent from the project site.
Longfin smelt (*Spirinchus thaleichthys*)	ST, CSSC	Spawns in fresh water in the upper end of the San Francisco Bay; occurs year-round in the South Bay.	**Absent from Project Site.** Has been reported in the South Bay year-round (Wernette 2000), and individuals have been collected in Alviso Slough (EDAW Inc. 2007). However, fish sampling in Coyote Creek and the Island Ponds north of Coyote Creek has detected the species only in January and March, suggesting that the species may be absent from the South Bay during the summer (Hobbs et al. 2012), likely due to reduced water quality conditions and a lack of mysid shrimp, which is likely their main food source (J. Hobbs pers. comm.). May be present in the tidal reaches of sloughs in the South Bay, including Guadalupe Slough and Moffett Channel, in the winter and spring when food resources are abundant and water quality conditions are suitable. It is unlikely to occur in the portion of Moffett Channel closest to the project site. Due to a lack of connectivity with tidal habitats, the southeastern channel does not provide suitable habitat, and this species is thus absent from the project site.
Central California Coast steelhead (*Oncorhynchus mykiss*)	FT	Cool streams with suitable spawning habitat and conditions allowing migration between spawning and marine habitats.	**Absent from Project Site.** Unlikely to occur in the project vicinity (i.e., Guadalupe Slough and Moffett Channel) due to the lack of suitable spawning conditions within the channels. Steelhead are known to occur in, and suitable spawning habitat is present in, San Francisquito Creek, Los Trancos Creek, Stevens Creek, Guadalupe River, Los Gatos Creek, Guadalupe Creek, Alamitos Creek, Calero Creek, Coyote Creek, Upper Penitencia Creek, and Arroyo Aguague (Leidy et al. 2005, NMFS 2005). Although unlikely, small numbers of stray, individual steelhead associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of Guadalupe Slough and Moffett Channel, although it is unlikely to occur in the portion of Moffett Channel closest to the project site. Due to a lack of connectivity with tidal habitats, the southeastern channel does not provide suitable habitat, and this species is thus absent from the project site.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
Federal or State Endangered, Threatened, or Candidate Species (cont.)			
California tiger salamander (*Ambystoma californiense*)	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands.	**Absent.** Populations located on the Santa Clara Valley floor have been extirpated due to habitat loss, and the species is now considered absent from the majority of the valley floor, including the project area (H. T. Harvey & Associates 1999a, 2012; SCVWD 2011). No records of California tiger salamanders are located within their dispersal distance (i.e., 1.3 miles) from the project area (CNDDB 2014) and the species is determined to be absent from the project area and the surrounding vicinity.
California red-legged frog (*Rana draytonii*)	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	**Absent.** This species has been extirpated from the urbanized Santa Clara Valley floor, due to development, the alteration of hydrology of its aquatic habitats, and the introduction of non-native predators such as non-native fishes and bullfrogs (H. T. Harvey & Associates 1997; SCVWD 2011). Thus, California red-legged frogs are determined to be absent from the project area.
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	FE, SE	Freshwater marshes, ponds, and slow-moving streams along the coast.	**Absent.** Common garter snakes in the project area belong to the infernalis subspecies (i.e., the red-sided garter snake [*Thamnophis sirtalis infernalis*]) (Barry 1994). Thus, true San Francisco garter snakes do not occur in the project area.
Bank swallow (*Riparia riparia*)	ST	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	**Absent as Breeder.** No recent nesting records from Santa Clara County, and no suitable nesting habitat occurs in or near the project area. Occurs only as a rare migrant.
Bald eagle (*Haliaeetus leucocephalus*)	SE, SP	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs, occasionally on electrical towers. Feeds mostly on fish.	**Absent.** Has been recorded nesting in the San Francisco Bay region only at inland reservoirs; very rare along the San Francisco Bay edge. No suitable nesting or foraging habitat in the project area.
Swainson's hawk (*Buteo swainsoni*)	ST	Nests in trees surrounded by extensive marshland or agricultural foraging habitat.	**Absent.** Suitable foraging habitat absent and does not breed in the vicinity of the project area. Thus, the species is determined to be absent.
California clapper rail (*Rallus longirostris obsoletus*)	FE, SE, SP	Salt marsh habitat dominated by pickleweed and cordgrass.	**Absent from Project Site.** The brackish marshes of Moffett Channel and Guadalupe Slough are expected to be used by clapper rails for foraging, at least occasionally. Clapper rails have been detected in nearly pure stands of alkali bulrush along Guadalupe Slough in 1990 and 1991 in the marshes north of Pond 2 and Pond A4 (H. T. Harvey & Associates 1990a, 1990b, 1991). These birds were most likely unmated males based on their behavior and vocalizations, and thus they may not have bred in those marshes. Because California clapper

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
Federal or State Endangered, Threatened, or Candidate Species (cont.)			
			rails typically nest in broader marshes with well-developed tidal channels (conditions that are absent from Guadalupe Slough and Moffett Channel), they may not breed in the marshes. Individuals have occasionally been reported in the vicinity by birders as well (Santa Clara County Bird Data, Unpublished; S. Rottenborn, pers. obs.); all reliable observations by birders have been along Guadalupe Slough, usually north of Ponds 1 and 2 (rarely along the northeastern edge of Pond 4). but the species is unlikely to occur in the portions of Moffett Channel closest to the project site
California black rail (*Laterallus jamaicensis coturniculus*)	ST, SP	Breeds in fresh, brackish, and tidal salt marsh.	**Absent from Project Site.** Until 2011, this species was known in the South Bay only as a rare winter visitor. However, the species has recently been recorded in tidal marshes in Alviso Slough near Ponds A10 and A11 (approximately 0.8 miles to the northeast), in Artesian Slough (approximately 2.7 miles to the east), and in Triangle Marsh (approximately 2.3 miles to the northeast) during the breeding season (L. Hall pers. comm.; SBB list-serve 2013). Although there are no records of this species in the project area (in any season), black rails may occasionally forage in the brackish or freshwater marshes of Moffett Channel or Guadalupe Slough. If black rails are breeding in South Bay marshes, there is potential for this species to breed in these channels as well, but the species is unlikely to occur in the portions of Moffett Channel closest to the project site
Western snowy plover (*Charadrius alexandrinus nivosus*)	FT, CSSC	Sandy beaches on marine and estuarine shores and salt pannes in San Francisco Bay saline managed ponds.	**Absent.** No suitable habitat is present within the project area itself. Not expected to occur within project vicinity owing to a lack of suitable habitat (i.e., lack of sandy beaches/salt pannes/dry salt ponds).
California least tern (*Sterna antillarum browni*)	FE, SE, SP	Nests along the coast on bare or sparsely vegetated, flat substrates. In the South Bay, nests in a managed pond and occasionally on dry salt pond bottoms. Forages for fish in open waters.	**Absent.** No suitable habitat is present within the project area itself. This species does not nest in Santa Clara County, and due to its endangered status, breeding locations are closely monitored and well known. The South Bay is an important post-breeding staging area for least terns, and this species forages in late summer and early fall in saline managed ponds and on the bay from Mountain View through Sunnyvale into the Alviso area. The primary post-breeding staging area seems to be on the managed ponds between Pond 1 and Stevens Creek. Both adult and juvenile least terns roost on managed pond levees (both outboard levees and interior levees between ponds) and boardwalks, and forage both in the saline managed ponds and over the open waters of the Bay. Therefore, least terns may occasionally forage in Ponds 1 and 2, Moffett Channel, and Guadalupe Slough during post-breeding staging in late summer and early fall. However, there are very few records of this species (e.g., by birders) from the water pollution control plant vicinity, and thus occurrence is irregular and by only low numbers of birds.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
Federal or State Endangered, Threatened, or Candidate Species (cont.)			
Least Bell's vireo (*Vireo bellii pusillus*)	FE, SE	Nests in heterogeneous riparian habitat, often dominated by cottonwoods (*Populus* sp.) and willows (*Salix* sp.).	**Absent.** The only breeding records in Santa Clara County are from Llagas Creek southeast of Gilroy in 1997 and the Pajaro River south of Gilroy in 1932. Otherwise, records in the County include 1–2 singing males along lower Llagas Creek in May 2001, and a singing male in June 2006 along Coyote Creek near the Coyote Creek Golf Club. This species is not known to breed in or near the project area, and no suitable breeding habitat is present.
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE, SE, SP	Salt marsh habitat dominated by common pickleweed.	**Absent from Project Site.** No suitable habitat is present within the project area itself. This species has been captured near the mouth of Guadalupe Slough in pickleweed-dominated salt marsh habitat (H. T. Harvey & Associates 1991). The potential for harvest mice to occur in the brackish tidal marshes of Guadalupe Slough and Moffett Channel adjacent to Ponds 1 and 2 is low; these marshes have sparse vegetative structure and do not contain dense thatch that harvest mice have been documented using in brackish marshes. Also, patches of ostensibly suitable habitat are fragmented by freshwater marsh and other unsuitable vegetation, such as perennial peppergrass, thereby reducing habitat quality of the brackish marshes. Nevertheless, some patches of pickleweed exist in these ponds, and salt marsh harvest mice have been recorded in brackish marshes in the South Bay (H. T. Harvey & Associates 2007). Therefore, the marshes along Guadalupe Slough and mid/lower Moffett Channel may support the species. The uppermost portion of Moffett Channel near the Main Plant, with pure stands of cattail and California bulrush, is unsuitable for the species, and the species is thus unlikely to occur very close to the project site.
California Species of Special Concern			
Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*)	CSSC	Cool rivers and large streams that reach the ocean and that have shallow, partly shaded pools, riffles, and runs.	**Absent from Project Site.** Unlikely to occur in the project vicinity(i.e., Guadalupe Slough and Moffett Channel) due to the lack of suitable spawning conditions within the channels. Chinook are known to occur in South Bay watersheds (e.g., Coyote Creek and Guadalupe River) although it is unknown whether there is a sustainable population of these fish, which are likely hatchery fish descendants. Although unlikely, small numbers of stray, individual salmon associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of Guadalupe Slough and Moffett Channel, although it is unlikely to occur in the portion of Moffett Channel closest to the project site. Due to a lack of connectivity with tidal habitats, the southeastern channel does not provide suitable habitat, and this species is thus absent from the project site
Foothill yellow-legged frog (*Rana boylii*)	CSSC	Partially shaded shallow streams and riffles with a rocky substrate. Occurs in a variety of habitats in coast ranges.	**Absent.** Suitable habitat for foothill yellow-legged frogs is absent from the project area. This species occurs in less urbanized areas of Santa Clara County and it has disappeared from farmed and urbanized areas of the county as well as many of the perennial streams below major reservoirs (H. T. Harvey & Associates 1999b).

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
California Species of Special Concern (cont.)			
Western pond turtle (*Actinemys marmorata*)	CSSC	Permanent or nearly permanent water in a variety of habitats.	**Absent.** A small population is known to be present in channels and ditches associated with Moffett Field to the west of the project area, but existing main plant activities, fencing, and lack of hydrologic connectivity preclude this species' use of the southeastern channel.
Redhead (*Aythya americana*)	CSSC	Nests in marshes and at pond margins.	**Absent.** Recorded nesting in the Project region only on a few occasions, in the 1970s and 1980s, at the Palo Alto Flood Control Basin. Not expected to breed in the project area.
Western least bittern (*Ixobrychus exilis hesperis*)	CSSC (nesting)	Nests and forages in freshwater marshes.	**Absent.** Although the species has been recorded occasionally in the Project region, there are no records from the project area, and no breeding records from Santa Clara County. This species likely occurs only as an occasional migrant (e.g., along Moffett Channel), if it occurs in the project area at all.
Black skimmer (*Rynchops niger)*	CSSC (nesting)	Nests on abandoned levees and islands in saline managed ponds and marshes.	**Absent.** Black skimmers have nested in the South Bay since 1994, including areas near the project area such as the island in Shoreline Lake, approximately 3 miles west of the project area (Bousman 2007a; Cornell Lab of Ornithology 2013; Santa Clara County bird data, unpublished; SBB list-serve 2013). No suitable nesting or foraging habitat is present in the project area.
Northern harrier (*Circus cyaneus*)	CSSC (nesting)	Nests in marshes and moist fields, forages over open areas.	**Absent.** Suitable nesting and foraging habitat are absent from the project area.
Long-eared owl (*Asio otus*)	CSSC (nesting)	Riparian bottomlands with tall, dense willows and cottonwood stands (also dense live oak and California Bay along upland streams); forages primarily in adjacent open areas.	**Absent.** Rare resident and occasional winter visitor in Santa Clara County. Suitable nesting and foraging habitat for long-eared owls is not present in the project area.
Short-eared owl (*Asio flammeus*)	CSSC (nesting)	Nests in marshes and moist fields, forages over open areas.	**Absent.** Possibly a rare forager in the vicinity during the non-breeding season, but not expected to breed on or near the project area, as this species has not been recorded nesting in the South Bay since the 1970s.
Burrowing owl (*Athene cunicularia*)	CSSC	Nests and roosts in open grasslands and ruderal habitats with suitable burrows, usually those made by California ground squirrels.	**Likely Absent.** The burrowing owl is known to occur during the non-breeding season on closed landfill areas southwest of the current household hazardous waste drop-off site, west of the Sunnyvale West Channel, and just west of the Sunnyvale East Channel (Chromczak 2014). No burrowing owls have been recorded since 1998 on the portion of the landfill immediately south/southeast of the household hazardous waste drop-off site or in a large area immediately east of Borregas Avenue. Burrowing owls were formerly known to occur on berms around the eastern portion of the main plant area (Chromczak 2014), but they have not been recorded on the main plant in recent years.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
California Species of Special Concern (cont.)			
Vaux's swift (*Chaetura vauxi*)	CSSC (nesting)	Nests in snags in coastal coniferous forests or, occasionally, in chimneys; forages aerially.	**Absent as Breeder.** In the South Bay, breeds primarily in snags within Santa Cruz Mountain forests and in residential chimneys in the foothills of the Santa Cruz Mountains. Suitable breeding habitat is not present in the project area; However, swifts occur within the project area as an occasional forager during migration.
Olive-sided flycatcher (*Contopus cooperi*)	CSSC (nesting)	Breeds in mature forests with open canopies, along forest edges in more densely vegetated areas, in recently burned forest habitats, and in selectively harvested landscapes.	**Absent as Breeder.** Common summer resident in higher-elevation areas of western Santa Clara County (Bousman 2007b). This species breeds widely in the Santa Cruz Mountains, and more sparingly in the Diablo Range, but it does not breed on the Santa Clara Valley floor. The species may occur in the project area only as an occasional forager during migration.
Loggerhead shrike (*Lanius ludovicianus*)	CSSC (nesting)	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	**May be Present.** Breeds in a number of locations in the Project region where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees provides perches and nesting sites (Bousman 2007c), though populations have declined in recent years as suitable habitat has been increasingly developed. Ruderal habitats in the project area provide suitable breeding and foraging habitat for up to one pair of shrikes.
Yellow warbler (*Setophaga petechia*)	CSSC (nesting)	Nests in riparian woodlands.	**Absent as Breeder.** Uncommon breeding bird in Santa Clara County, although it is a common fall migrant (Bousman 2007d). For nesting, prefers riparian corridors with adjacent open space (rather than in heavily developed areas) and an overstory of mature cottonwoods and sycamores, a midstory of box elders and willows, and a substantial shrub understory (Bousman 2007d). There is very low potential for yellow warblers to breed in trees along the periphery of the Main Plant but they are rare breeders close to the edge of the Bay in Santa Clara County. This species occurs throughout the South Bay as a migrant, and is particularly numerous in fall.
San Francisco common yellowthroat (*Geothlypis trichas sinuosa*)	CSSC	Nests in herbaceous vegetation, usually in wetlands or moist floodplains.	**Present.** Common yellowthroats nesting in the project area are of the special-status subspecies *sinuosa* (San Francisco Bay Bird Observatory [SFBBO] 2012). The greatest proportion of nesting records in the South Bay occur within brackish and freshwater marshes near the edge of the Bay, and in early-successional riparian habitat in broader floodplains (Bousman 2007e). Nests are typically located in extensive stands of bulrushes in brackish marshes and dense cattail beds in freshwater marshes, but the species also nests in forbs in riparian habitats. Within the project area, a few pairs of this species may nest in ruderal habitat along the southeastern channel.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
California Species of Special Concern (cont.)			
Yellow-breasted chat (*Icteria virens*)	CSSC (nesting)	Nests in dense stands of willow and other riparian habitat.	**Absent as Breeder.** This species is a rare breeder, and only slightly more regular transient, in willow-dominated riparian habitats in the South Bay. There are no records of this species in the project area and this species does not nest this close to the Bay (Bousman 2007f). May occur in the project area only as a rare nonbreeding transient.
Alameda song sparrow (*Melospiza melodia pusillula*)	CSSC	Nests in salt marsh, primarily in marsh gumplant and cordgrass along channels.	**Present.** The *pusillula* subspecies of song sparrow is endemic to Central and South Bay. This subspecies forages and breeds in salt and brackish marshes associated with Guadalupe Slough and Moffett Channel. Within the freshwater habitat along the southeastern channel, the few pairs of breeding song sparrows may be the widespread, freshwater subspecies *gouldii* or intergrades between the two races.
Grasshopper sparrow (*Ammodramus savannarum*)	CSSC (nesting)	Nests and forages in grasslands, meadows, fallow fields, and pastures.	**Absent.** Known to occur in the San Francisco Bay region primarily in grasslands and less frequently disturbed agricultural habitats, mostly in the foothills. Suitably extensive grasslands are not present in the project area.
Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*)	CSSC	Nests in pickleweed dominant salt marsh and adjacent ruderal habitat.	**Absent as Breeder.** In the South Bay, nests primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat and in adjacent ruderal habitats (Rottenborn 2007a). This species is a rare breeder that may occur in the scattered pickleweed patches in the more expansive marshes at the confluence of Moffett Channel and Guadalupe Slough, on the north side of Pond A4, and possibly in the short, ruderal habitat along the interior of Pond A4. During the nonbreeding season, *alaudinus* and other savannah sparrow subspecies dispersants might forage in the project area.
Tricolored blackbird (*Agelaius tricolor*)	CSSC (nesting colony)	Nests near fresh water in dense emergent vegetation.	**Absent as Breeder**. In Santa Clara County, this species has bred in only a few scattered locations, and is absent, or occurs only as a nonbreeder, in most of the county (Rottenborn 2007b). It typically nests in extensive stands of tall emergent herbaceous vegetation in non-tidal freshwater marshes and ponds. No suitable nesting habitat is present on the project site, but tricolored blackbirds occur around the main plant and in marshes on the Project site regularly as nonbreeding foragers (Santa Clara County Bird Data, Unpublished).
Salt marsh wandering shrew (*Sorex vagrans halicoetes*)	CSSC	Medium to high marsh 6 to 8 feet above sea level with abundant driftwood and common pickleweed.	**Absent from Project Site.** Suitable pickleweed-dominated salt marsh habitat providing breeding or foraging habitat for this species is absent from the project site, and largely absent from the vicinity. There are small patches of pickleweed habitat north of Pond A4 and there is salt marsh habitat near the mouth of Guadalupe Slough, but these marshes generally lack suitable high marsh habitat for this species. This species may occur in the same areas in the project vicinity where the salt marsh harvest mouse occurs.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
California Species of Special Concern (cont.)			
Pallid bat (*Antrozous pallidus*)	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	**Absent as Breeder.** Historically, pallid bats were likely present in a number of locations throughout the South Bay, but their populations have declined in recent decades. Pallid bats have been extirpated from highly urbanized areas close to the Bay in the region, and thus this species is not expected to roost in the Project vicinity. There is a low probability that individuals could forage in the project area, although due to the urbanized nature of the surrounding areas, it is unlikely that pallid bats are present in the vicinity of the project area.
Townsend's big-eared bat (*Corynorhinus townsendii*)	CSSC, SC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	**Absent.** No known extant populations occur on the Santa Clara Valley floor, and no breeding sites are known from the project area. Suitable breeding habitat is not present on the project area.
Western red bat (*Lasiurus blossevillii*)	CSSC	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	**Absent as Breeder.** May occur in low numbers as a migrant, but does not breed in the project area. They are expected to roost primarily in wooded riparian areas and are unlikely to roost in the project area due to a lack of suitable roosting habitat.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSSC	Nests in a variety of habitats including riparian areas, oak woodlands, and scrub.	**Absent.** No suitable habitat occurs on the Project site. With the exception of records along Coyote Creek and along the edges of the Santa Clara Valley, San Francisco dusky-footed woodrats are not known to occur in the more urbanized portions of Santa Clara County (H. T. Harvey & Associates 2010).
American badger (*Taxidea taxus*)	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	**Absent.** Suitably extensive grasslands or agricultural habitats are not present on the project area.
State Fully Protected Species			
California brown pelican (*Pelecanus occidentalis californicus*)	SP (nesting colony and communal roosts)	Undisturbed islands near estuarine, marine, subtidal, and marine pelagic waters.	**Absent.** Brown pelicans are uncommon nonbreeding visitors in Santa Clara County. The species has been observed occasionally foraging in Ponds 1, 2, and A4, as well as other former salt ponds and open water habitats in the South Bay (Santa Clara County Bird Data, Unpublished; Cornell Lab of Ornithology 2013), but no suitable habitat is present on the project site itself.
American peregrine falcon (*Falco peregrinus anatum*)	SP	Forages in many habitats; nests on cliffs and tall bridges and buildings.	**Absent as Breeder.** Peregrine falcons are known to nest on electrical transmission over managed ponds north of Moffett Field (using the old nests of other species), but they are not currently nesting in the project area. Peregrine falcons forage for birds over the project area.

TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT ARE

Name	*Status	Habitat	Potential for Occurrence in the Project Area
State Fully Protected Species (cont.)			
Golden eagle (*Aquila chrysaetos*)	SP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	**Absent as Breeder.** Suitable breeding habitat is not present in the project area, and this species forages in open grassland habitats in the project vicinity, including the landfill areas, very infrequently.
White-tailed kite (*Elanus leucurus*)	SP	Nests in tall shrubs and trees, forages in grasslands, marshes, and ruderal habitats.	**Absent as Breeder.** In the vicinity of the project area, the species is known to nest along the northern edge of Santa Clara County throughout the open areas edging the San Francisco Bay (Bousman 2007g). There are a number of records from Moffett Field to the west, Sunnyvale Baylands Park to the east, and from the landfill area (Cornell Santa Clara County Bird Data, unpublished; Santa Clara County Bird Data, unpublished). Open grassland areas at the landfill and open marsh areas within Guadalupe Slough and Moffett Channel, particularly the more extensive marsh north of Pond A4, provide suitable foraging habitat. Trees and shrubs along the edge of the landfill provide suitable nesting habitat for up to two pairs, and this species could occasionally forage on the project site, though it is not expected to nest on the project site itself due to existing levels of human disturbance.
Ringtail (*Bassariscus astutus*)	SP	Cavities in rock outcrops and talus slopes, as well as hollows in trees, logs, and snags that occur in riparian habitats and dense woodlands, usually in close proximity to water.	**Absent.** Species is present in less urbanized settings in the South Bay; however, there are no records from the project area and suitable riparian and dense woodland habitat is not present.

Key to Abbreviations:

Status: Federally Endangered (FE); Federally Threatened (FT); State Endangered (SE); State Threatened (ST); State Candidate for Listing (SC); State Fully Protected (SP); California Species of Special Concern (CSSC); Species Protected by the Marine Mammal Protection Act (MMPA)

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TABLE 2 (Continued)
SPECIAL-STATUS ANIMAL SPECIES, THEIR STATUS, HABITAT DESCRIPTION, AND POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT AREA

SOURCES (cont.)

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