Addendum to the Environmental Impact Report for the San José - Santa Clara Water Pollution Control Plant Master Plan (SCH# 2011052074)

HEADWORKS IMPROVEMENTS AND NEW HEADWORKS

File No. PP19-042

Prepared by

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

December 2019

ADDENDUM TO THE SAN JOSE/SANTA CLARA WATER POLLUTION CONTROL PLANT MASTER PLAN FINAL ENVIRONMENTAL IMPACT REPORT (SCH#2011052074) AND ADDENDA THERETO

Pursuant to Section 15164 of the CEQA Guidelines, the City of San José has prepared an addendum to the San Jose/Santa Clara Water Pollution Control Plant Master Plan Environmental Impact Report (PMP FEIR) because minor changes made to the project, as described below, do not raise important new issues about the significant impacts on the environment.

PP19-042 --San José/Santa Clara Regional Wastewater Facility Headworks Improvements and New Headworks. Proposed refinement and improvements to the Plant Master Plan for the preliminary treatment operation including the construction of a new Headworks facility, associated pipelines, pump stations and other associated project components, relocation of the septage receiving station, addition of a vacuum truck dumping station, and the decommissioning of old Headworks facility; located at the San José/Santa Clara Regional Wastewater Facility.

Location: 700 Los Esteros Road, San José CA **Council District:** 4

The environmental impacts of this project were addressed by the Final Program Environmental Impact Report (EIR) entitled, "San Jose/Santa Clara Water Pollution Control Plant Master Plan Environmental Impact Report," and findings were adopted by City Council Resolution No. 76858 on November 19, 2013.

The proposed project is eligible for an addendum pursuant to CEQA Guidelines §15164, which states that "A lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in CEQA Guidelines §15162 calling for preparation of a subsequent EIR have occurred."

Circumstances which would warrant a subsequent EIR include substantial changes in the project or new information of substantial importance which would require major revisions of the previous EIR due to the occurrence of new significant impacts and/or a substantial increase in the severity of previously identified significant effects. The proposed project is within the scope of the Plant Master Plan EIR and addenda thereto.

The following impacts were reviewed and found to be adequately considered by the EIR cited above:

- ☒ Transportation
- ☒ Air Quality
- ☒ Hydrology & Water Quality
- ☒ Cultural Resources
- ☒ Population and Housing
- ☒ Cumulative Impacts
- ☒ Mineral Resources
- ☒ Land Use
- ☒ Biological Resources
- ☒ Hazardous Materials
- ☒ Aesthetics
- ☒ Greenhouse Gas Emissions
- ☒ Growth Inducing Impacts
- ☒ Noise and Vibration
- ☒ Geology and Soils
- ☒ Public Facilities & Services
- ☒ Energy
- ☒ Public Facilities & Services
- ☒ Agriculture

ANALYSIS:

The proposed project was analyzed for environmental impacts using an Initial Study Checklist and technical reports (attached). No new or more significant impacts beyond those identified in the San José/ Santa Clara Water Pollution Control Plant Master Plan Final Environmental Impact Report have been identified, nor have any new mitigation measures or alternatives which are considerably different from those analyzed, been identified.

This addendum will not be circulated for public review, but will be attached to PMP FEIR, pursuant to CEQA Guidelines Section §15164 (C).

Sanhita Ghosal
Environmental Project Manager

12/9/2019
Date

Rosalynn Hughey, Director
Planning, Building and Code Enforcement

Deputy

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CHAPTER 1
Introduction

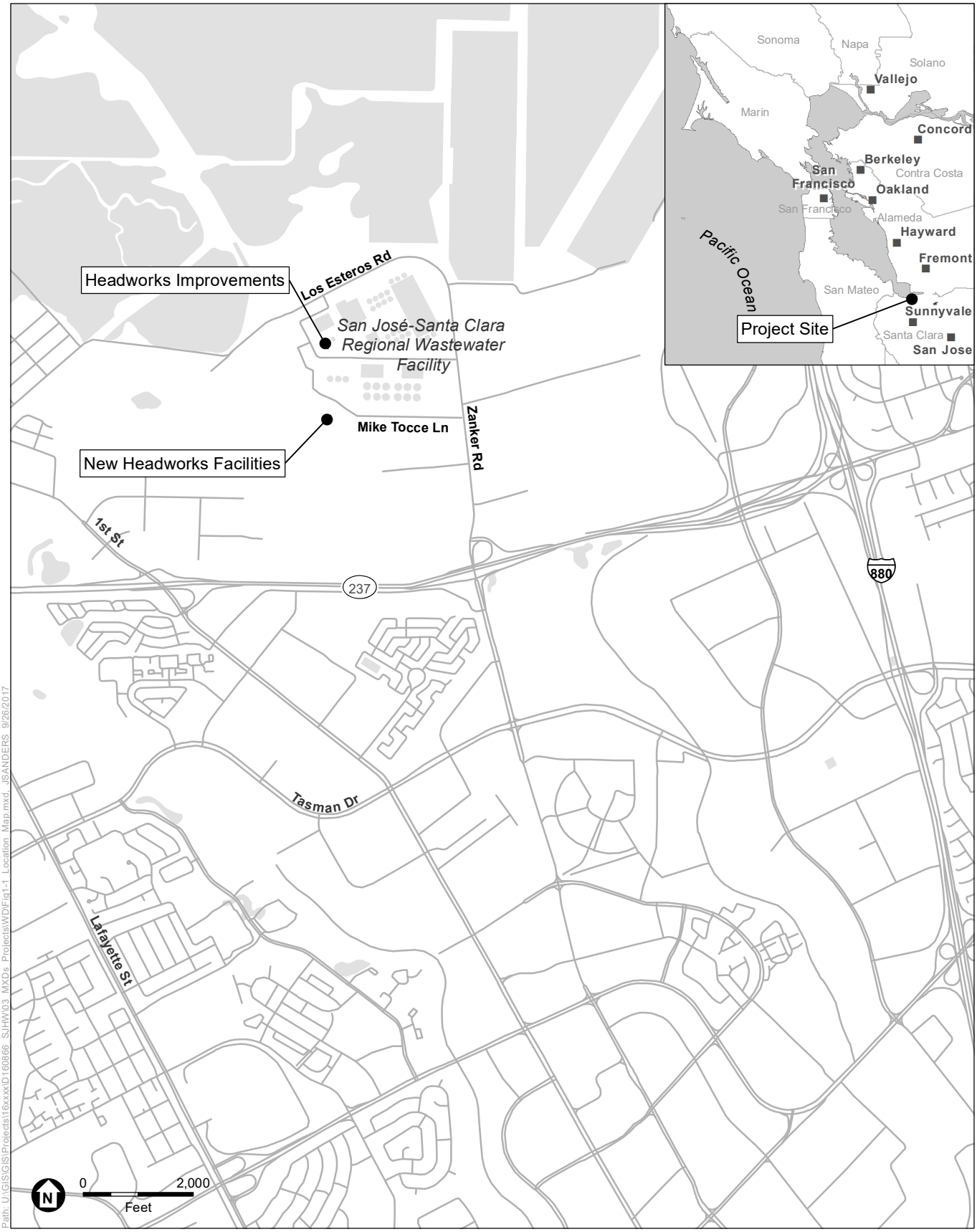
1.1 Background

1.1.1 Overview of the San José-Santa Clara Regional Wastewater Facility

The San José-Santa Clara Regional Wastewater Facility (Facility) treats domestic, industrial, and commercial wastewater from the cities of San José, Santa Clara, Campbell, Los Gatos, Monte Sereno, Cupertino, Milpitas, and Saratoga; and unincorporated Santa Clara County. The Facility is located at 700 Los Esteros Road in north San José, California, between State Route (SR) 237 and San Francisco Bay and flanked by the community of Alviso to the west and the City of Milpitas to the east, as shown in **Figure 1-1**. In total, the existing service area covers roughly 300 square miles and contains a service population of approximately 2 million people (1.4 million residents and 600,000 workers). Originally constructed in 1956, the Facility treats an average of 110 million gallons per day (mgd) of wastewater, with an existing capacity of 167 mgd of average dry weather influent flow. The Facility provides a tertiary level of treatment, in accordance with state and local regulations. It produces recycled water for irrigation, industrial use and toilet flushes, and also discharges treated wastewater to the South San Francisco Bay. The City of San José (City) manages the Facility and the surrounding Facility lands, which together total approximately 2,680 acres.

About half of this area consists of current and former lagoons and drying beds used for biosolids[1] management, and lands that have provided a buffer between Facility operations and neighboring land uses. The main operational area of the Facility occupies about seven percent of the Facility and surrounding lands (196 acres), and it includes most of the facilities used in wastewater treatment operations, with the exception of the lagoons and beds used for solar drying of biosolids (**Figure 1-2**). **Appendix A** includes a schematic flow diagram for the treatment of liquids and solids at the Facility.

[1] "Biosolids" refers to treated sewage sludge: the solid residuals from the wastewater treatment process.



San José Headworks Improvements and New Headworks

Figure 1-1
Project Location Map

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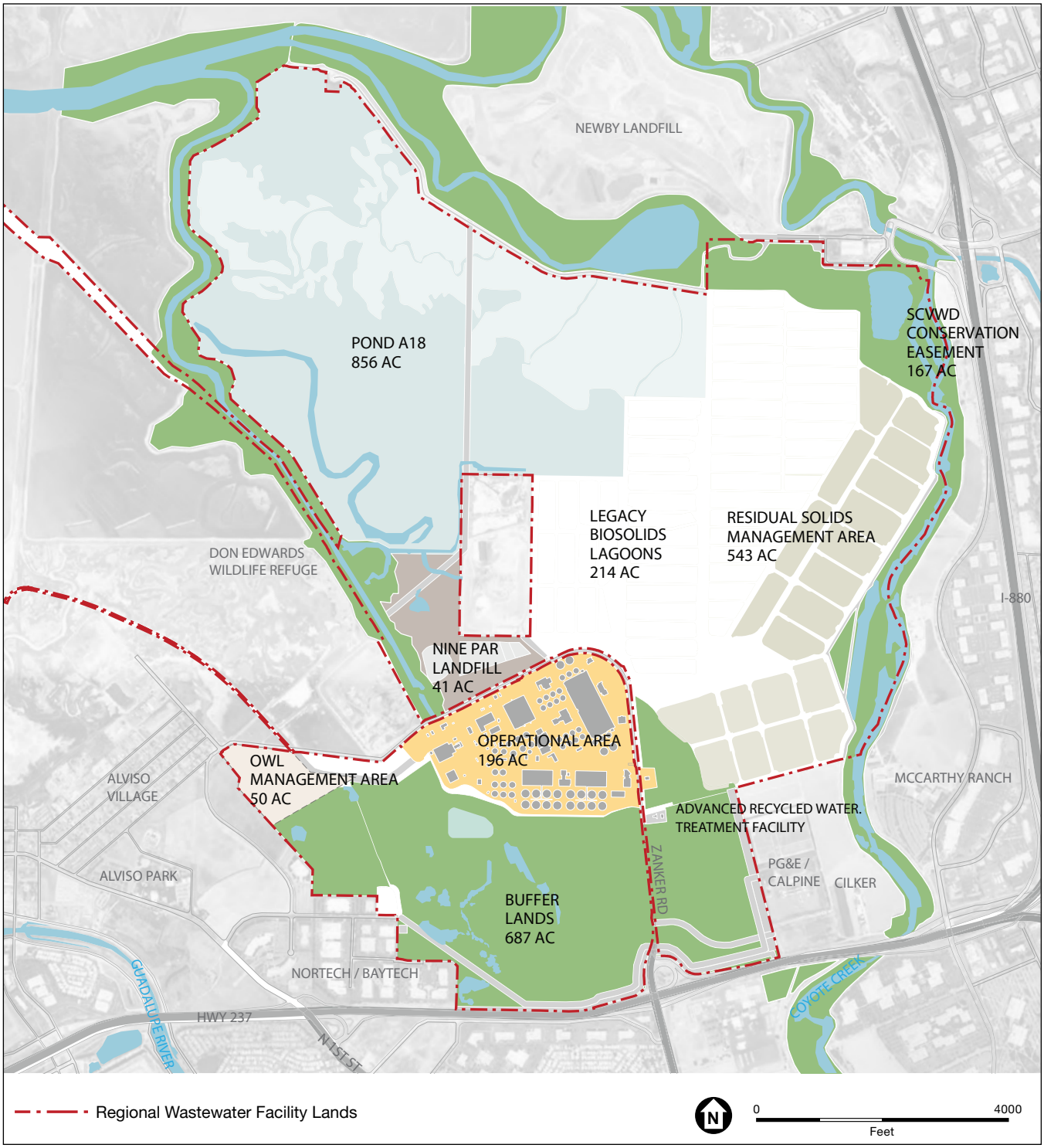


SOURCE: City of San Jose, 2013

San José Headworks Improvements and New Headworks

Figure 1-2
Regional Wastewater Facility Existing Land Uses

1.1.2 Plant Master Plan

In December of 2013, City adopted the San José/ Santa Clara Water Pollution Control Plant Master Plan (City of San José, 2013). The City prepared the Plant Master Plan for the Facility and the surrounding lands to identify Facility improvement projects needed to address the following: aging infrastructure, reduce odors, accommodate projected population growth in the Facility's service area, comply with changing regulations that affect the Facility, and develop a comprehensive land use plan for the entire site. The master planning effort identified both near-term and long-term (to year 2040) Capital Improvement Program (CIP) facility improvements and land uses. The plan covers the components, processes, and land uses within the approximately 2,680-acre boundary of the lands owned by the Facility, shown on **Figure 1-3**.

The City was the lead agency for the San José-Santa Clara Water Pollution Control Plant Master Plan Environmental Impact Report (EIR) (Plant Master Plan EIR; State Clearinghouse No. 2011052074; City of San José File Number PP11-403).[2] The City adopted the EIR for the Plant Master Plan on November 19, 2013. The EIR evaluated potential environmental impacts that could occur as a result of implementing the Plant Master Plan, including the headworks facilities. The EIR also provided applicable mitigation to reduce the intensity of potential environmental impacts.

1.1.3 Wastewater Treatment Process

Indoor water (wastewater) flows from homes and businesses through the sanitary sewer system to the Facility for treatment, where solids are separated from liquids. Preliminary treatment of incoming wastewater includes removal of debris using large screens, and removal of sand and gravel in grit chambers. The facilities that remove debris and grit are called the headworks facilities. Remaining solids in the wastewater then settle out under gravity in primary treatment tanks. During secondary treatment, the next treatment stage, aeration tanks pump air into the wastewater to encourage the growth of naturally-occurring bacteria that remove organic pollutants in the water. The wastewater is then pumped into clarifiers, where the bacteria settle out of the water. During tertiary treatment, wastewater flows through filter beds to remove very small suspended solids, and then through tanks where chlorine is used to kill any remaining viruses or bacteria. The chlorine is then neutralized to protect aquatic life, and the treated water is either piped to an outfall channel draining to San Francisco Bay, or to the South Bay Water Recycling system.

[2] The legal name of the facility remains "San José/Santa Clara Water Pollution Control Plant" but beginning in early 2013, the facility's common name was changed to San José-Santa Clara Regional Wastewater Facility.

SOURCE: City of San Jose, 2013

San José Headworks Improvements and New Headworks

Figure 1-3
Approved Plant Master Plan Land Use Plan

1.1.4 Existing Preliminary Treatment Facilities

The preliminary treatment system at the Facility includes flow equalization and two headworks facilities to process influent wastewater: Headworks 1 and Headworks 2, shown in **Figure 1-4** The existing Headworks 1 and Headworks 2 are designed to remove large material and grit[3] from the wastewater as it enters the Facility, as is shown schematically in **Figure 1-5**. Debris and grit collected by these facilities are trucked to a landfill at a rate of six truck trips per week. Headworks 1 was built in the early 1960s and has the capacity to handle 240 mgd. Headworks 2, built in 2008, has a rated capacity of 160 mgd and was designed to operate in parallel with Headworks 1 to handle a combined peak hour wet weather flow[4] of 400 mgd. The capacities of the headworks facilities are such that either facility can accommodate average dry weather flows,[5] but both facilities need to be online (operating in parallel) to accommodate peak wet weather flows.

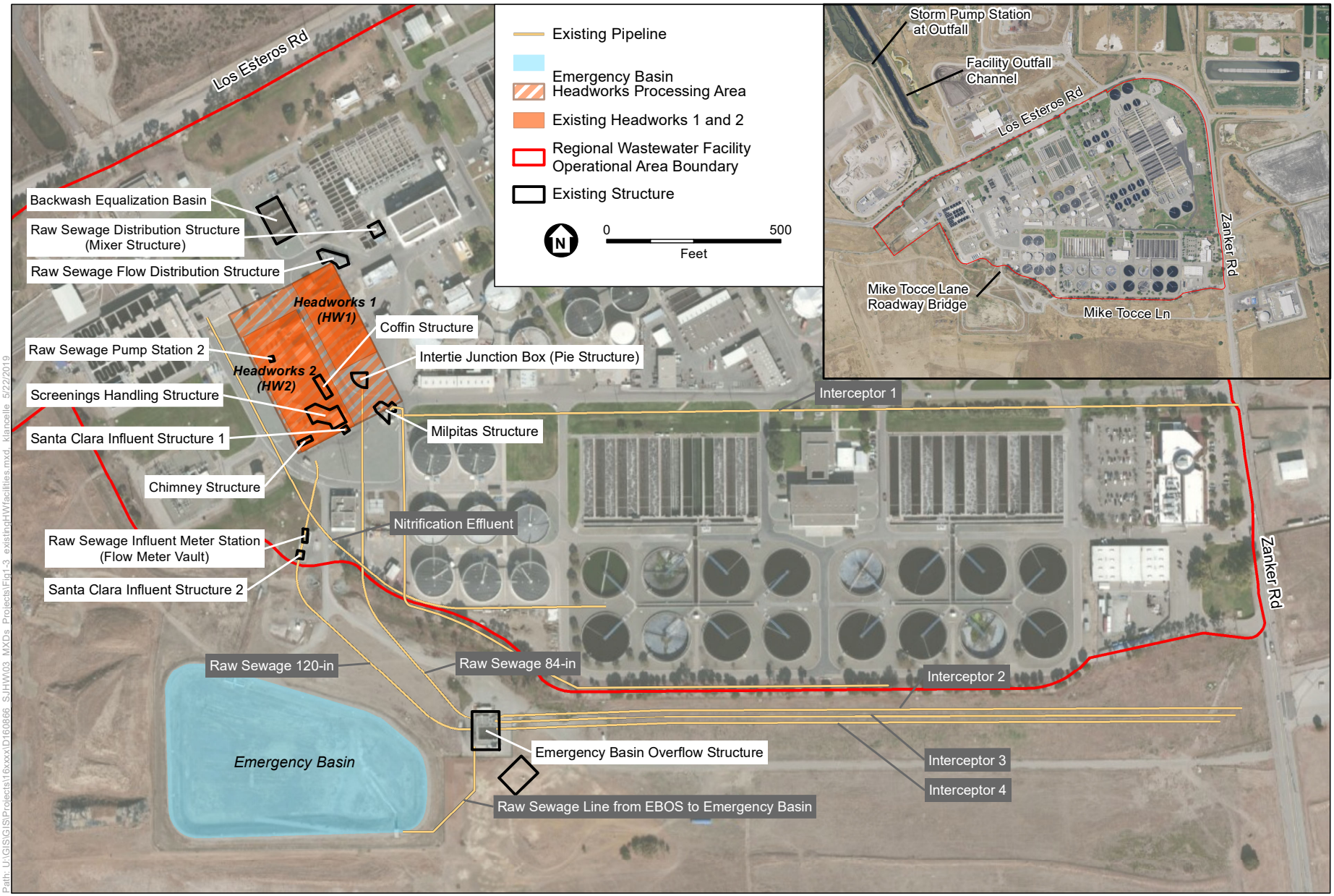
In the event of an emergency or peak flow in excess of 330 mgd, excess wastewater can be allowed to overflow upstream of the existing headworks facilities, from the Emergency Basin Overflow Structure (EBOS) to the 6.4 acre, 8-million-gallon Emergency Basin, where it would be held temporarily until incoming wastewater flows are reduced. The Emergency Basin is located south of the existing headworks facilities (refer to Figure 1-3). It was constructed in 2007 and has never been used.

The existing preliminary treatment facilities operate 24 hours per day, 7 days per week, and are maintained by approximately 10 people. Power for the existing preliminary treatment facilities is provided by PG&E. Storm water within the Facility operational area is collected and routed to the headworks facilities for treatment.

1.2 Purpose of This Addendum

Potential environmental impacts of improvements to the preliminary treatment facilities, including odor control, construction of influent piping, expansion and lining of the Emergency Basin, and demolition of existing headworks facilities were evaluated in the Plant Master Plan EIR. Since completion of the Plant Master Plan EIR, the City has further refined the project components to include a new headworks facility (Headworks 3) and further improvements (i.e., new pump stations, additional pipelines, and lining of the Emergency Basin), which are described in Chapter 2 of this document. The City also has a more defined construction footprint that accounts for staging areas, pipeline corridors, and project component locations. Because the City has proposed these changes following EIR adoption, an addendum to the EIR is necessary to meet the requirements of the California Environmental Quality Act (CEQA).

3 Grit in this context refers to small non-organic material (such as sand) contained in wastewater.
4 Peak wet weather flow is the maximum daily rate of incoming wastewater.
5 Average dry weather flow is the daily rate of incoming wastewater averaged over the dry season.



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San José Headworks Improvements and New Headworks

SOURCE: ESA, 2017; Google Earth, 2017

NOTE: Existing septage, leachate, and vactor receiving not shown; receiving stations located adjacent to Chimney Structure, Coffin Structure, and Headworks 1

Figure 1-4
Existing Headworks Facilities

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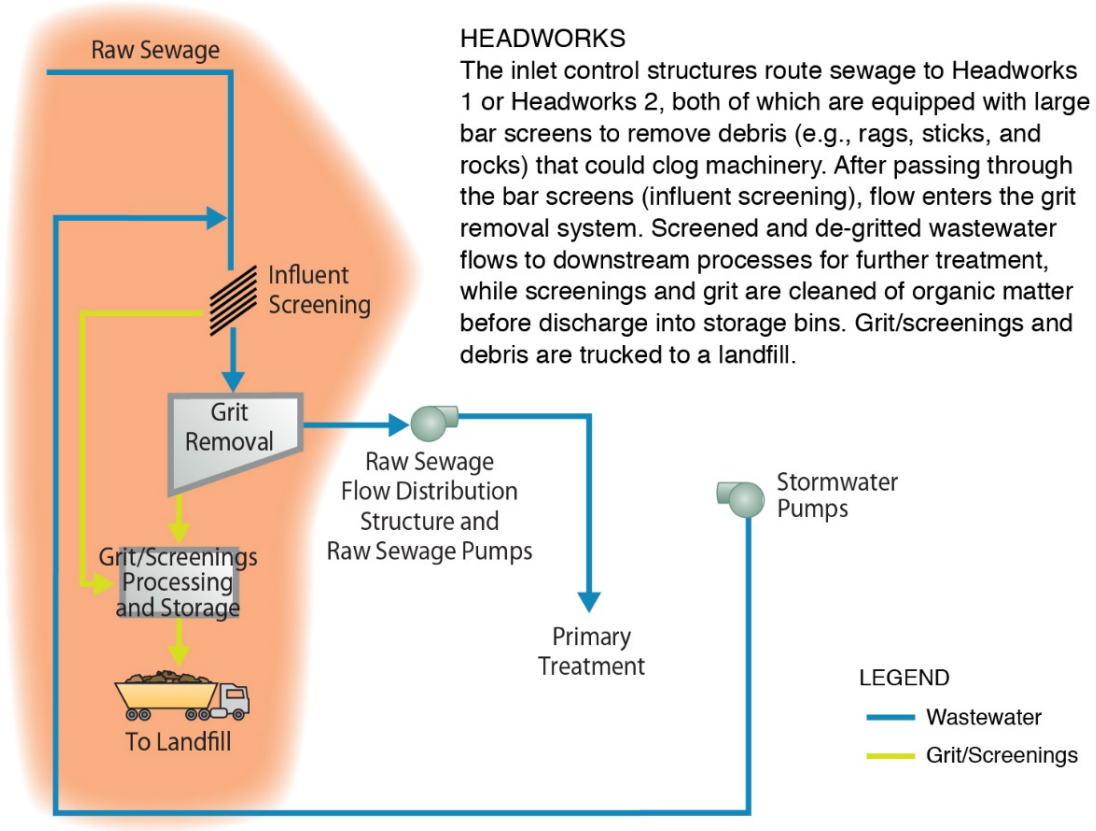

SOURCE: City of San José, *San José-Santa Clara Water Pollution Control Plant Master Plan Environmental Impact Report*, November 2013.

San José Headworks Improvements and New Headworks

Figure 1-5
Headworks Process Flow Schematic

The CEQA Guidelines (Sections 15162 and 15164) allow that a lead agency may prepare an addendum to a previously adopted or certified EIR if minor technical changes or additions to the environmental evaluation are necessary, but none of the following occurs:

1. Substantial changes are proposed in the project which will require major revisions to the Environmental Impact Report due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous Environmental Impact Report due to involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous Environmental Impact Report was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the Environmental Impact Report;
    b. Significant effects previously examined will be substantially more severe than shown;

c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous Environmental Impact Report would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

This Addendum documents that the modifications to the Headworks Improvements and New Headworks Facilities (Project) do not trigger any of the conditions described above. Specifically, given the Project description and knowledge of the Project area (based on the Project, site-specific environmental review, and environmental review prepared for the City's Plant Master Plan EIR), the City has concluded that the Project would not result in any new significant impacts not previously disclosed in the circulated EIR; nor would it result in a substantial increase in the magnitude of any significant environmental impact previously identified. For these reasons, an addendum to the approved EIR is sufficient to meet the requirements of CEQA. In accordance with CEQA Guidelines Section 15164, an addendum need not be circulated for public review but can be included in or attached to the final adopted EIR. The City must consider the addendum with the adopted EIR prior to making a decision on the Project.

The approved mitigation measures provided in the adopted Plant Master Plan EIR Mitigation Monitoring and Reporting Program (MMRP) have been incorporated by reference, with modifications (additions, deletions, renumbering/renaming, or other minor revisions) made as necessary to apply to the Project. The adjusted mitigation measures do not change the original impact conclusions from the Plant Master Plan EIR, nor are they considerably different from that analyzed in the Plant Master Plan EIR.

1.3 References

City of San José, 2013. *The Plant Master Plan*, November 2013.

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

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CHAPTER 2
Project Description

2.1 Project Location

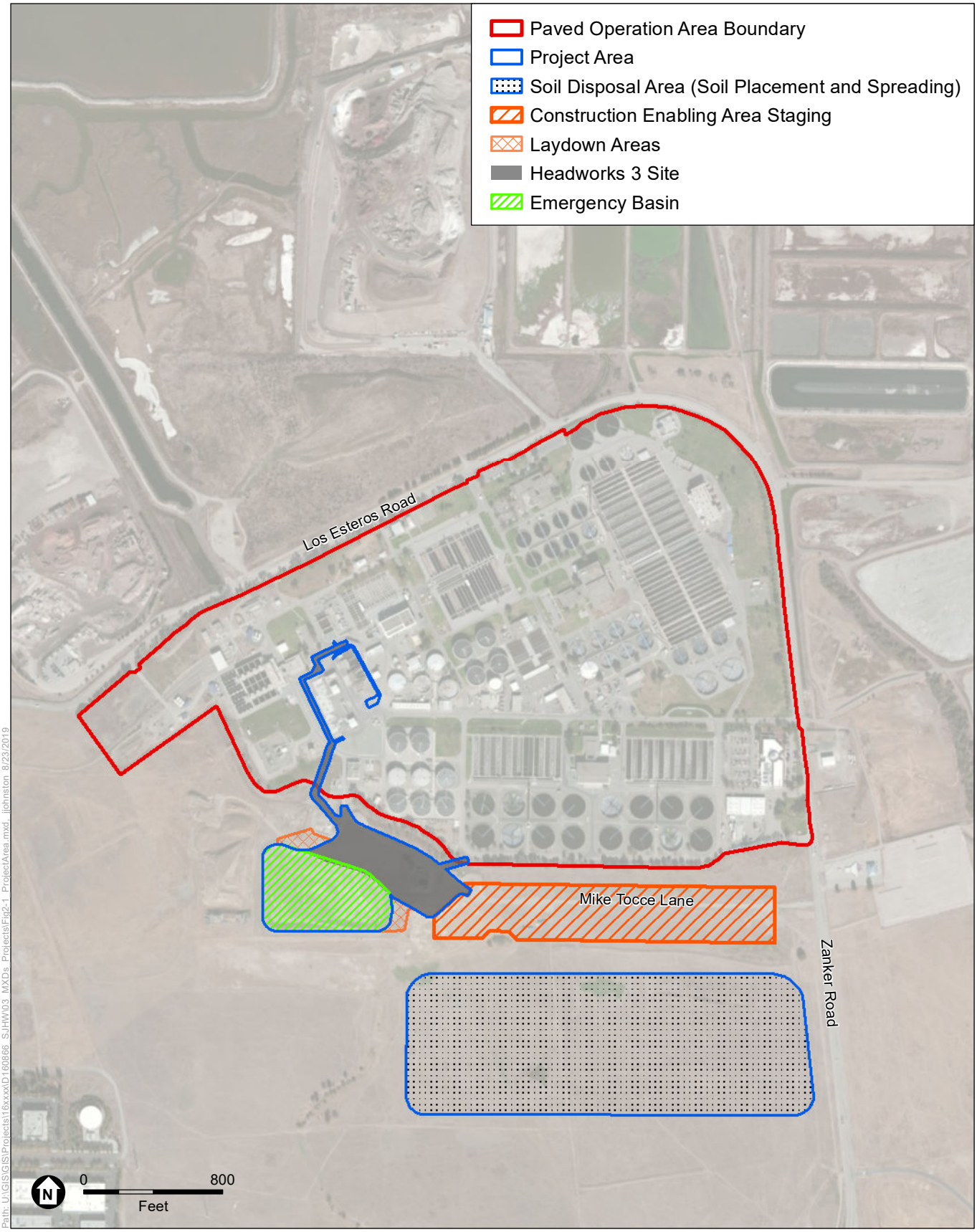
The Project would be located in the northern area of Santa Clara County, within the City of San José. New facilities would be constructed on approximately ten acres of land located within the 2,680 acre-wastewater facility. Project activities would occur on two different sites on Facility property: one site for the proposed headworks (also called "preliminary treatment") facilities; and one site for disposal of excavated soil, located to the south of the operational area, as shown in **Figure 2-1**.

2.2 Summary of Approved Preliminary Treatment Improvements

As discussed in Section 1.1.2, the City has prepared a Plant Master Plan for the Facility. The Plant Master Plan Facility improvements and land uses were evaluated in the Plant Master Plan EIR. As part of the Plant Master Plant EIR, headworks odor control was evaluated at a project level of detail, and influent piping and demolition associated with the headworks was evaluated at a program level of detail. In particular, the following improvements were evaluated:

- Installation of covers made of steel or reinforced fiberglass over existing junction boxes, screens, and screenings and grit collection areas of the Headworks 2 complex, along with concrete and steel corrosion protection.
- Installation of conduits to collect foul air and a combination of biological-chemical treatment scrubbers[6] at the Headworks 2 complex, which would have required installation of piping and underground utility connections to nearby existing facilities.
- Re-routing and modifying pipelines along the southern boundary of the operational area to simplify the pipeline configuration.
- Installation of new raw sewage junction boxes near Zanker Road.
- Consolidation of headworks functions at Headworks 2.
- Expanding the flow equalization capacity of the Emergency Basin from 8 million gallons to 10 million gallons and lining the basin.
- Decommissioning and demolition of Headworks 1 facilities.

[6] A bioscrubber involves pushing air through media filled with microorganisms that use biological processes to remove odors.



SOURCE: City of San Jose

San José Headworks Improvements and New Headworks

Figure 2-1
Project Area

ESA

2.3 Changes Since Plant Master Plan EIR

Following approval of the Plant Master Plan, the City proceeded to design the Project with the goal of providing influent conveyance and preliminary treatment facilities capable of treating current flows and the extreme peak hour wet weather flow condition in year 2040, consistent with the long-term goals set forth in the Plant Master Plan. The Plant Master Plan established for the Facility an extreme peak wet weather hydraulic capacity of 450 mgd. Since Plant Master Plan approval, additional studies have reduced the estimated extreme peak hour wet weather flow condition in 2040 to 396 mgd (City of San José, 2017).

To achieve this overarching goal, preliminary treatment (or headworks) facilities were to be consolidated at the Headworks 2 location. The construction of additional headworks facilities, which would be needed to treat extreme peak hour wet weather flow conditions in year 2040, adjacent to Headworks 2 was considered feasible based on initial analyses. Subsequent evaluation determined, however, that the construction complexity at Headworks 2 (due to existing underground utilities and the depth of excavation needed) made the Headworks 2 location infeasible for consolidating headworks functions.

The additional headworks facilities (called Headworks 3) are now proposed adjacent to the EBOS and the Emergency Basin, as discussed in greater detail in Section 2.5, Project Components.

2.4 Project Need and Objectives

The need for the Project is predicated on the essential service provided by the Facility: to protect public health and water quality through reliable, high quality, cost-effective wastewater treatment. Upgrades to the headworks facilities and Emergency Basin are needed to support this overall service due to the age and state of the infrastructure and changes in operational reliability and regulatory requirements. A condition assessment in 2009 identified Headworks 1 as having structures and equipment that are aging, deteriorating, and would be more expensive to repair than replace. Changes in operational reliability related to the headworks facilities are twofold: 1) the deposition of debris and grit in downstream processes reduces operational reliability; and 2) as additional pipelines had to be installed in the Project area, and with the construction of Headworks 2, wastewater routing has become increasingly complex, and in some cases resulted in excessive settling of raw sewage solids under certain operating conditions.

The City developed 15 objectives to advance the overall operational, economic, environmental, and social goals of the Plant Master Plan. The following four objectives are relevant to the Project:

- ***Wastewater Treatment***. Protect the environment, public health, and safety through reliable wastewater treatment that can accommodate population growth and meet foreseeable future regulations.
- ***Efficient Operations***. Maximize the long-range efficient use of the Facility's existing facilities and reduce the footprint of the existing biosolids treatment area.

- ***Cost Effectiveness***. Maintain cost-effective Facility operations and competitive sewer rates through enhanced operations, flexibility, and rigorous evaluation of new technologies.
- ***Good Neighbor***. Reduce visual, noise, and odor impacts from Facility operations to neighboring land uses to the extent practicable.

2.5 Project Components

This section describes the proposed facilities, processes, and other features associated with the Project. The Project site boundary encompasses all of these proposed components. As compared to the potential improvements of the headworks facilities proposed as part of the Plant Master Plan (described above in Sections 2.2 and 2.3), this Project still includes re-routing and modifying pipelines along the southern boundary of the paved operational area, and decommissioning of Headworks 1 facilities (as listed in Section 2.2), but does not include demolition of Headworks 1 or installation of odor control at Headworks 2. Instead, it includes construction of a new odor-controlled headworks facility (Headworks 3) to replace Headworks 1.

The Project would result in approximately 11 acres of newly created or redeveloped impervious area.

2.5.1 Headworks 3

Headworks 3, shown on **Figure 2-2**, would consist of the following processes: screenings removal and handling; raw sewage pumping; grit removal; and odor control, further described below. To facilitate construction sequencing, reduce the overall construction cost of the Project, and to avoid site constraints in the vicinity of Headworks 1 and 2, Headworks 3 would be located outside of the paved operational area, near the existing Emergency Basin and the Emergency Basin Overflow Structure or EBOS. The existing and proposed processes are also illustrated on **Figure 2-3**. The proposed 35-foot tall odor control exhaust tower would be the tallest of the Headworks 3 structures.

- **Screenings Removal and Handling**. Facilities supporting this process would include bar screens,[7] washer-compactors,[8] and dumpsters with a canopy. The bar screens would be covered.
- **Raw Sewage Pumping**. Facilities supporting this process would include sewage pumps and flow measurement. Up to five pumps would be installed below ground in a covered facility at Headworks 3 for raw sewage pumping. The raw sewage flow meters and raw sewage pump motors would be located above ground.

[7] Bar screens are grates through which wastewater flows that are designed to catch and divert large debris (such as rags, branches, and plastic bags) from the influent wastewater.

[8] Washer-compactor equipment washes organic matter from large debris captured by the bar screens and then removes remaining water from the debris by compaction, in order to reduce the volume and weight of material hauled to a disposal facility.

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SOURCE: Jacobs, San Jose Headworks Project 30% Design Rendering Site Overall, May 20, 2019

San José Headworks Improvements and New Headworks

Figure 2-2

Proposed Headworks 3 Site Layout and Paving

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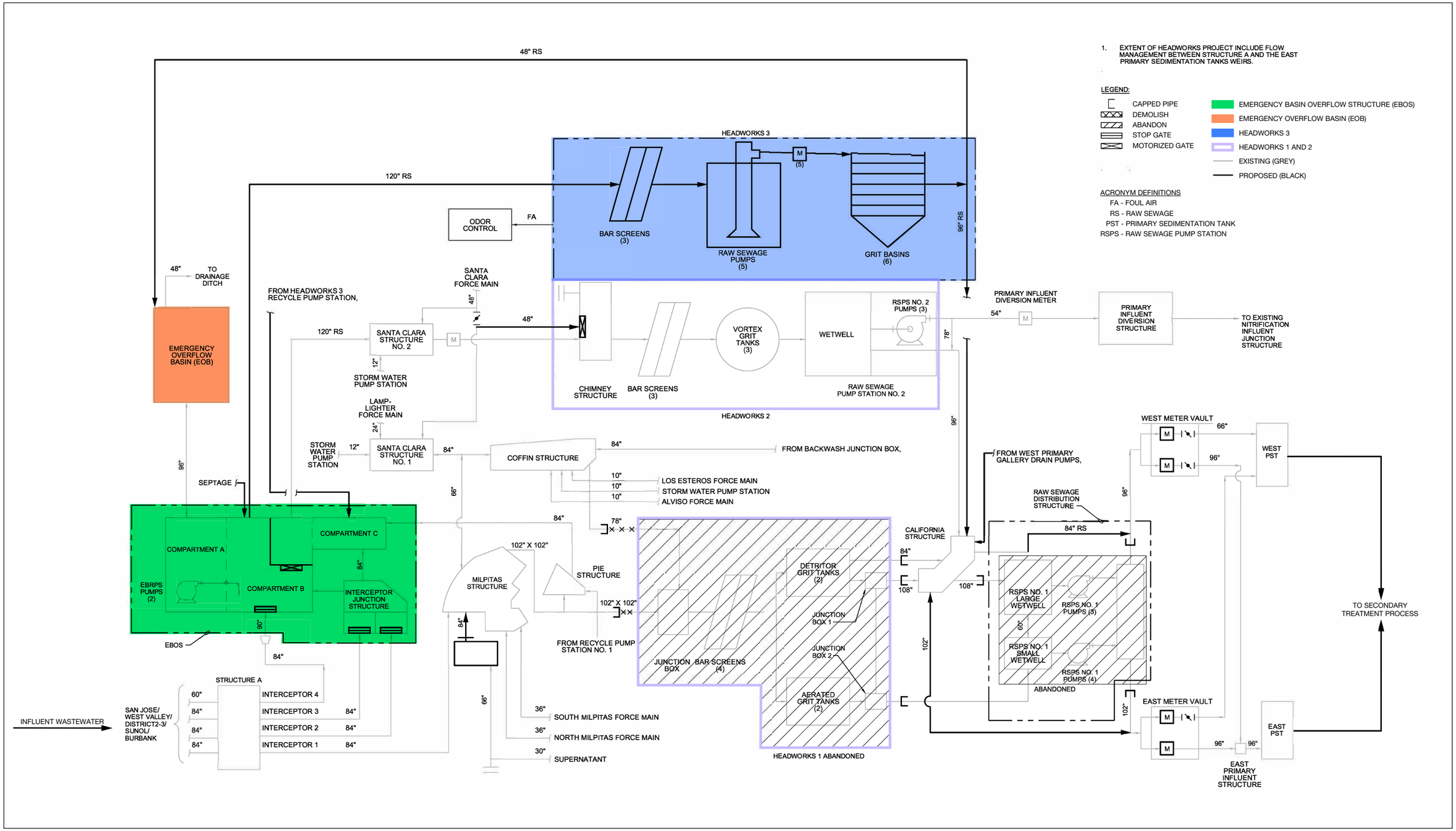

SOURCE Jacobs

San José Headworks Improvements and New Headworks

Figure 2-3

Headworks Improvements and New Headworks Process Flow Diagrams

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- **Grit Removal**. Facilities supporting this process would include stacked tray separators[9], six grit pumps, grit washer-classifiers[10], grit belt conveyor, and dumpsters with a canopy. Flow from the Grit Removal structure will flow by gravity the Raw Sewage Flow Distribution Structure (also called the California Structure). The grit basins would be within a concrete structure, below grade, and covered with removable covers. The grit conveyor would be enclosed.
- **Odor Control**. Odor control for Headworks 3 facilities would include a biotrickling filter[11] with an exhaust tower equipped with a fan. Odorous air would be routed from the Headworks 3 facilities to the 35-foot tall Odor Control tower, located within the Headworks 3 area.

An Electrical Building would be installed at Headworks 3 to support the processes listed above.

2.5.2 Septage, Leachate, and Vacuum Truck Dumping

Wastewater from sources that are not connected to the sanitary sewer system (including waste from septic tanks), called septage, and extracted groundwater collected from basements or at landfills, called leachate[12] are brought to the Facility in trucks from with the service area for treatment. Currently, these are discharged from trucks into the existing headworks adjacent to Headworks 1 and 2 for treatment. The Project would relocate the existing septage receiving station and add a vacuum truck[13] dumping station (the Vactor Truck Facility) to the eastern end of Headworks 3, as shown on Figure 2-2.

2.5.3 Existing Facilities Improvements

In addition to new facilities described above, several existing facilities would be modified as part of the Project. The Emergency Basin, shown on **Figure 2-4**, is a 6.8-acre area, with 8-million-gallon capacity designed to collect excess raw wastewater during emergency and extreme peak flow conditions to control the amount of wastewater flowing through the treatment facilities. It would continue to operate as it is currently designed. The basin is currently unlined. It would be lined with an estimated 4 inches of aggregate base topped by between 5 and 6 inches of concrete. The capacity of the Emergency Basin would be expanded from the existing 8 million gallons to 12 million gallons by raising the elevation of the overflow structure from its current height of 6 feet above existing grade to 9 feet above grade, which would allow a maximum water surface elevation of 8.3 feet within the basin. The existing embankment in the northwest section of the basin, adjacent to the new Headworks 3 facilities, would also be replaced as needed to accommodate Headworks 3 construction.

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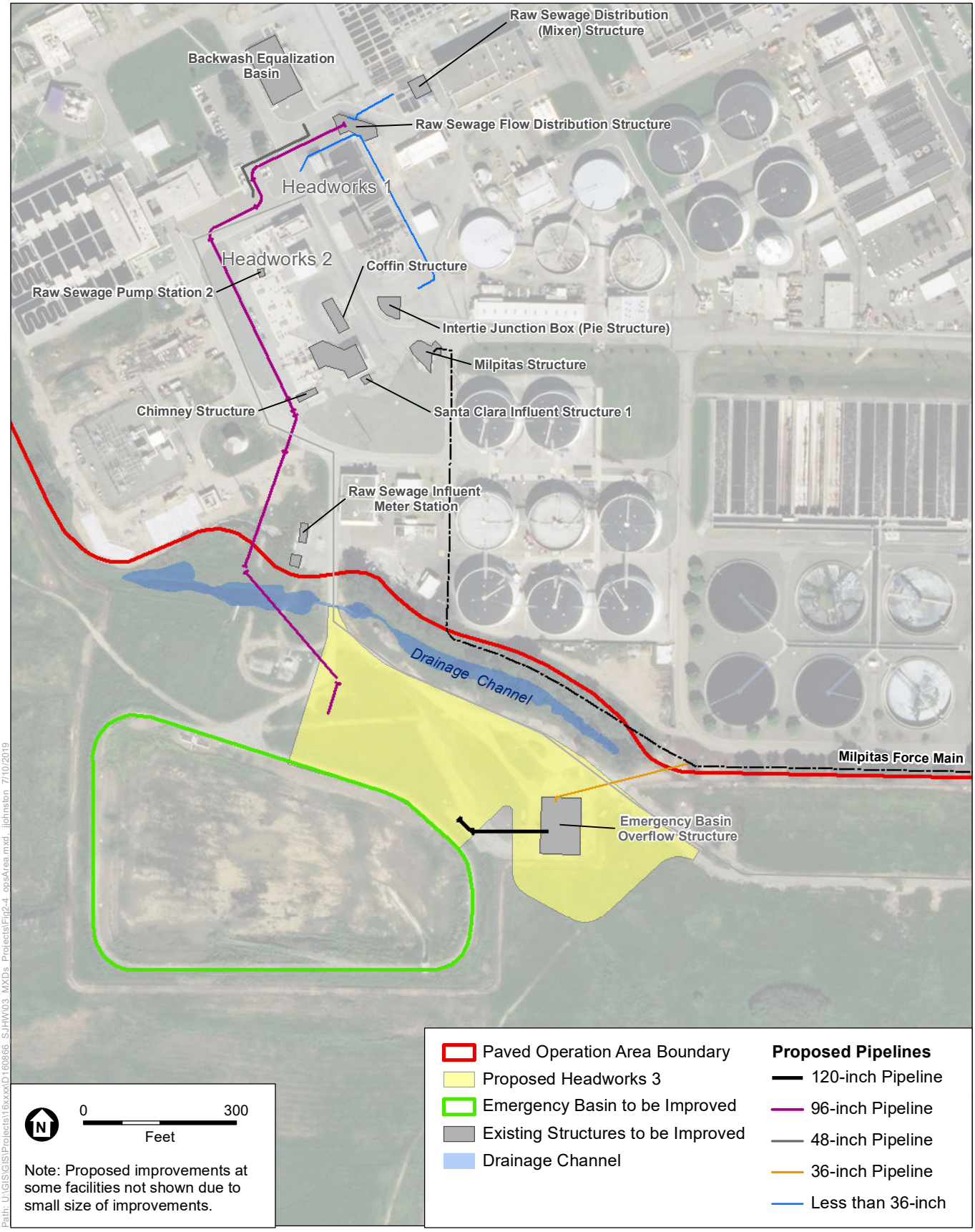
9 A stacked tray separator is a type of grit separator. Grit separators separate water containing grit (small inorganic solids, such as sand) from the rest of the wastewater influent.

10 A grit washer-classifier removes settleable inorganic material (such as sand) from wastewater and washes it to remove any sticky or small organic matter.

11 A biofilter is a contained porous filter media on which microorganisms live. The microorganisms oxidize odor and air emission compounds, producing carbon dioxide, water, biomass, and benign byproducts, when odorous air is passed through the filter media. In a biotrickling filter, water is sprayed within the container onto the biofilter to support the microorganisms that remove the odorous compounds.

12 Septage is waste removed from septic tanks in the service area. Leachate is the solution formed when water percolates through a permeable medium; one example is groundwater that has percolated through solid waste.

13 Vacuum trucks are tank trucks that have a pump and a tank, and are designed to extract liquid, sludges, or slurries, for example from sewer cleanout activities. These trucks are sometimes called “vactor” trucks.



San José Headworks Improvements and New Headworks

Figure 2-4
Existing Facilities Improvements and Proposed Pipelines

ESA

The new concrete lining would allow process sediment to be cleaned from the basin and facilitate the existing use. The concrete lining would also prevent the burrowing of animals, which has increased the risk of breach of the perimeter embankments.

Other improvements include restoring existing structures and creating new openings or plugging existing openings within existing structures to accommodate either new piping or the demolition of existing piping. Improvements would be made to the following existing structures associated with the installation of new piping (existing structures identified in Figure 1-3; new facilities also shown on Figure 2-4):

- **EBOS**. Fill or remove existing openings and add new openings, isolation walls, or gates within the existing EBOS to route influent to either Headworks 2 or Headworks 3.
- **Santa Clara Influent Structure No. 1**. To connect Santa Clara Influent Structure No. 1 to Headworks 2, gate and pipeline alterations will be made inside the structure to facilitate flow distribution.
- **Raw Sewage Flow Distribution Structure (California Structure)**. Modify the existing framing and repair cracks in the structure to facilitate additional recycled water flows being routed to this structure.
- **Intertie Junction Box (Pie Structure)**. Excavate near the Pie Structure to allow recycle flows from Recycle Pump Station No. 1 to discharge into the Pie Structure.

Improvements associated with other site changes would be made to the following structures:

- **Milpitas Structure**. The project would rehabilitate an existing pipeline and the Milpitas Structure. The pipeline connecting the Milpitas Structure to Headworks 1 would be plugged, and associated valves in the Milpitas Structure would be removed, to support removing Headworks 1 from service.
- **Raw Sewage Distribution Structure (Mixer Structure)**. A new manhole will be installed to intercept and re-route flow around the Mixer Structure. Then concrete plugs will be installed ensure the Mixer Structure is isolated from flows.
- **Raw Sewage Influent Meter Station (Flow Meter Vault)**. The existing flow meter would be replaced with piping.
- **Coffin Structure**. The existing raw sewage line connecting Coffin Structure to Headworks 1 would be capped to support decommissioning of Headworks 1.

2.5.4 Recycle Pump Station

Liquid collected during treatment processes that is returned to the Headworks influent for treatment constitutes a recycle flow at the Facility. This recycle flow, along with several existing plant drains and storm water, are currently routed to Headworks 1. The decommissioning of Headworks 1 requires these flows to be redirected proposed Headworks 3. The Project would construct one new pump station within the paved operational area: Recycle Pump Station No. 1, shown on Figure 2-4. The new pumps would be enclosed below ground at the level of the wastewater. The pumps would be powered by a combination of above ground electrical motors and submersible pumps (i.e., pumps with the motors contained within the pump units). The pump station would have

redundant pumping capacity provided by a duty/standby pump system. Recycle Pump Station No. 1 would have an estimated three pumps.

2.5.5 Pipelines and Piping Improvements

The Project would construct new pipelines of various sizes and depths between the Headworks 3 site, EBOS, and facilities in the paved operational area. Four of the pipelines would be 3 feet or greater in diameter and would include the following:

- A 36-in diameter pipeline connecting EBOS to the existing Milpitas Force Main
- A 120-inch diameter pipeline connecting EBOS to Headworks 3.
- A 96-inch diameter pipeline connecting Headworks 3 to the Raw Sewage Flow Distribution Structure (California Structure).
- A 48-inch diameter pipeline connecting an existing subgrade pipeline junction box to the existing Backwash Equalization Basin.

Proposed pipelines are shown on Figure 2-4. The 96-inch pipeline would be installed below and across an existing drainage channel that is adjacent to the southwest and western portions of the paved operational area and separates the paved operational area from the Project site and the existing EBOS.

Two other pipelines, less than 3 feet in diameter, would also be installed as part of the Project. One pipeline would connect the new Recycle Pump Station No. 1 to existing facilities (from the existing plant drain system to the Pie Structure) within the paved operational area. A second pipeline, also constructed entirely within the paved operational area, would connect the Raw Sewage Flow Distribution Structure to the Raw Sewage Distribution (Mixer) Structure.

The Project would also reroute other plant drain pipelines, as required, for construction of the new facilities and to tie into existing facilities. The Project will also bring to the Headworks 3 site small diameter pipelines to support the Headworks 3 such as fire water, process water, and instrument air.

2.5.6 Access Roads and Storm Water Management Infrastructure

Vehicle access to Headworks 3 would be provided through the main Facility gate at 700 Los Esteros Road and along existing paved roads to the culvert crossing south of Headworks 2, where the existing pavement ends and new pavement will start. Vehicle turning would occur along the proposed Loop Road, which would encircle the existing EBOS. Figure 2-2 illustrates the proposed new pavement areas.

There is no existing storm drain system near the proposed Headworks 3 site. The area north of the Emergency Basin (including the existing roads serving it) currently drains northward into the existing drainage channel consisting of a series of functionally isolated segments that retain water during the wet season (refer to Figure 2-4). Flows from the isolated segment at the northernmost

end of the channel are culverted under Los Esteros Road to a bypass channel and storm water basin, which then flow to San Francisco Bay via a pump station and weir structure[14] at the northern end of the bypass channel.

With the Project, storm water from Headworks 3 paved areas shown on Figure 2-2 would be collected onsite and routed to Headworks 3 for treatment.

2.5.7 Soil Disposal Area

As further discussed in Section 2.7.2, non-hazardous soil excavated as part of Headworks 3 construction would be placed within the soil disposal area shown on Figure 2-1. Haul trucks would access the soil disposal site from a point south of the existing EBOS. Once soil disposal activities are completed, the access route would be restored to existing conditions. The soil would be spread to a depth of one foot.

2.6 Operations

Headworks 3 is intended to replace Headworks 1 as the new duty headworks. Prior to full-time use of Headworks 3 and associated facilities, the headworks facilities would undergo testing to confirm all components are operating properly. Once testing is complete, Headworks 1 will be taken out of service. Headworks 2 will be retained in its current location and would be brought online to treat flows above the peak hour dry weather flow. Details of Headworks 3 operations are described below.

2.6.1 Capacity, Operating Hours, and Workforce

The City has projected wastewater flows and loads through 2040 as part of the master planning process for the Facility, and has since updated the Plant Master Plan's flow and load projections based on subsequent data. The Project would be designed to support the projected capacity of the headworks facilities, which is 400 mgd extreme peak hour wet weather flow (when both Headworks 3 and existing Headworks 2 are in service). Headworks 3 would become the lead headworks facility, normally operating in dry flow conditions.

The Project would operate 24 hours per day, 7 days per week. The operation and maintenance of the new Headworks 3 would fall within the current Facility procedures, and no additional staff is planned.

2.6.2 Truck Trips and Routes

Once design capacity is reached, it is anticipated that approximately 14 truck trips per week would be required for removal of material collected by the headworks facilities; of those, 11 trucks would haul screening material, and 3 trucks would haul collected grit. This number of trucks would be generated for grit and screenings removal regardless of whether the Project is built, as the number of trucks needed to haul screenings and grit is proportional to the volume of

[14] A weir is a structure which is constructed across a stream channel to change the stream's water flow characteristics.

Facility influent. These trucks would access Headworks 3 via the main Facility gate on Los Esteros Road, turning around within the operational area or using the Loop Road. The same route would be used by these trucks when exiting the Facility.

Septage, leachate, and vacuum trucks would similarly travel to the new Headworks 3 site using the paved operational area as occurs under existing conditions. The Project would not affect the number of these truck trips per day.

2.6.3 Energy and Utilities

All pumps would be electrically driven, and backup power would come from the Facility's existing power sources, which include dual PG&E grid feeds and power generated at the cogeneration facility. Energy would be provided by PG&E. All storm water runoff from the Headworks 3 site will be collected and pumped into the headworks facilities for treatment.

2.6.4 Maintenance Activities

As noted above, Project maintenance activities would not require additional staff and would be similar to existing maintenance of Headworks 1 (which would be decommissioned). These activities include replacement of process equipment on an as-needed basis and replacement of the odor control media. Headworks 3 facilities include standby or redundant units (one standby screen at the screenings removal and handling facilities, for example), and existing standby power would be available to support the Headworks 3 facilities if needed. Unless in emergency conditions, maintenance activities that require process equipment to be offline would occur when flows are relatively low and standby or redundant units could be employed.

2.7 Construction Process and Schedule

2.7.1 Construction Schedule, Work Hours and Work Force

Table 2-1 summarizes the Project construction schedule. Project construction would require two and a half years, from approximately February 2020 through December 2022. Proposed typical construction hours for the Project would be Monday through Friday, 7:00 am to 5:00 pm. However, the selected contractor may be required to work on Saturday and Sunday, or during extended hours (up to 10 hour shifts, or 24 hours for critical connections).

The size of the construction work force would vary over the construction period, averaging about 60 workers and ranging up to a maximum of 80 workers.

TABLE 2-1
APPROXIMATE CONSTRUCTION SCHEDULE AND WORKFORCE

Construction Activity	Estimated Schedule [a]	Approximate Average Daily Construction Work Force
Site Preparation (clear and prepare site, reroute existing utilities)	February 2020 – May 2020	Average: 60 Maximum: 80
Headworks 3 (including Septage, Leachate, and vacuum truck stations, and Odor Control)	February 2020 – May 2022	
Emergency Basin	July 2020 – May 2021	
Existing Facilities Improvements	February 2020 – December 2022	
Recycle Pump Station	October 2021 – March 2022	
Pipelines and Piping Improvements	January 2021 – June 2022	
Roads and Paving	May 2022 – June 2022	
Finish Work, Startup, Testing	November 2021 – December 2022	
TOTAL	February 2020 – December 2022	

NOTES:
[a] Some construction activities will overlap.

SOURCE: Jacobs, San Jose Headworks Project Design-Build Schedule (30% Design), June 6, 2019.

A maximum of 48 truck trips per day would occur during excavation and grading for the pipelines. During this same period, up to 160 vehicle trips per day associated with construction workers would occur.

2.7.2 Construction Process

Best Management Practices

During construction, the contractor would be required to comply with state and City of San José standard runoff, erosion, and dust control best management practices. Groundwater from excavations would be pumped directly into the headworks or existing Facility influent, for treatment.

Preliminary Site Characterization

Preceding construction at the site, work to provide a detailed characterization of site features and facility conditions would occur. Some preliminary site characterization activities would assess existing facilities and operations, while other activities would require minor ground disturbance (such as geotechnical investigations and soil testing). Ground-disturbing activities would occur within areas to be disturbed during construction. Preliminary site characterization activities would include:

- Condition assessments
- Surveying
- Geotechnical investigations
- Soil testing
- Utility location
- Grit sampling
- Final equipment selection
- Traffic planning
- Hydraulic evaluation

Site Preparation

During site preparation, trucks would deliver construction equipment and miscellaneous materials to the Project area and field offices would be set up.

A segment of the northern Emergency Basin berm may be temporarily removed during Project construction, and, if needed, replaced by a temporary sheet pile wall[15] to maintain the function of the Emergency Basin during the two-year construction period.

Excavation and Grading for Headworks 3

Excavation and grading for Headworks 3 would include excavating and grading areas for the Headworks 3 buildings and grading surrounding areas to be paved. Excavation for pipelines associated with Headworks 3 (pipelines "downstream" of EBOS) is also assumed to occur during this phase. Some or all of the excavated soil would be placed onsite in the soil disposal area, spread to a depth of approximately 1 foot. The disturbance area would be larger than footprints of individual structures, as shown on **Figure 2-5**. A total of approximately 13.5 acres would be disturbed during construction of all Headworks 3 facilities and lining of the Emergency Basin. The maximum depth of excavation associated with Headworks 3 would be approximately 41 feet below ground surface.

Excavated soil would be tested in accordance with state and federal requirements prior to offhaul. Non-hazardous excavated soil would be spread in the Facility buffer lands south of the Construction Enabling Area (shown as the Soil Disposal Area on **Figure 2-6**) or hauled offsite. Up to 15acres within the 42-acre Soil Disposal Area would be used for soil placement. Vehicles hauling soil would transit from the existing Emergency Basin or Construction Enabling Area to the soil disposal area. No permanent new roadway would be developed. Class II (hazardous) soils would be hauled to either Altamont or Keller Canyon landfills.

Table 2-2 estimates soil and demolition debris volumes, and associated truck loads required to haul soil and demolition debris.

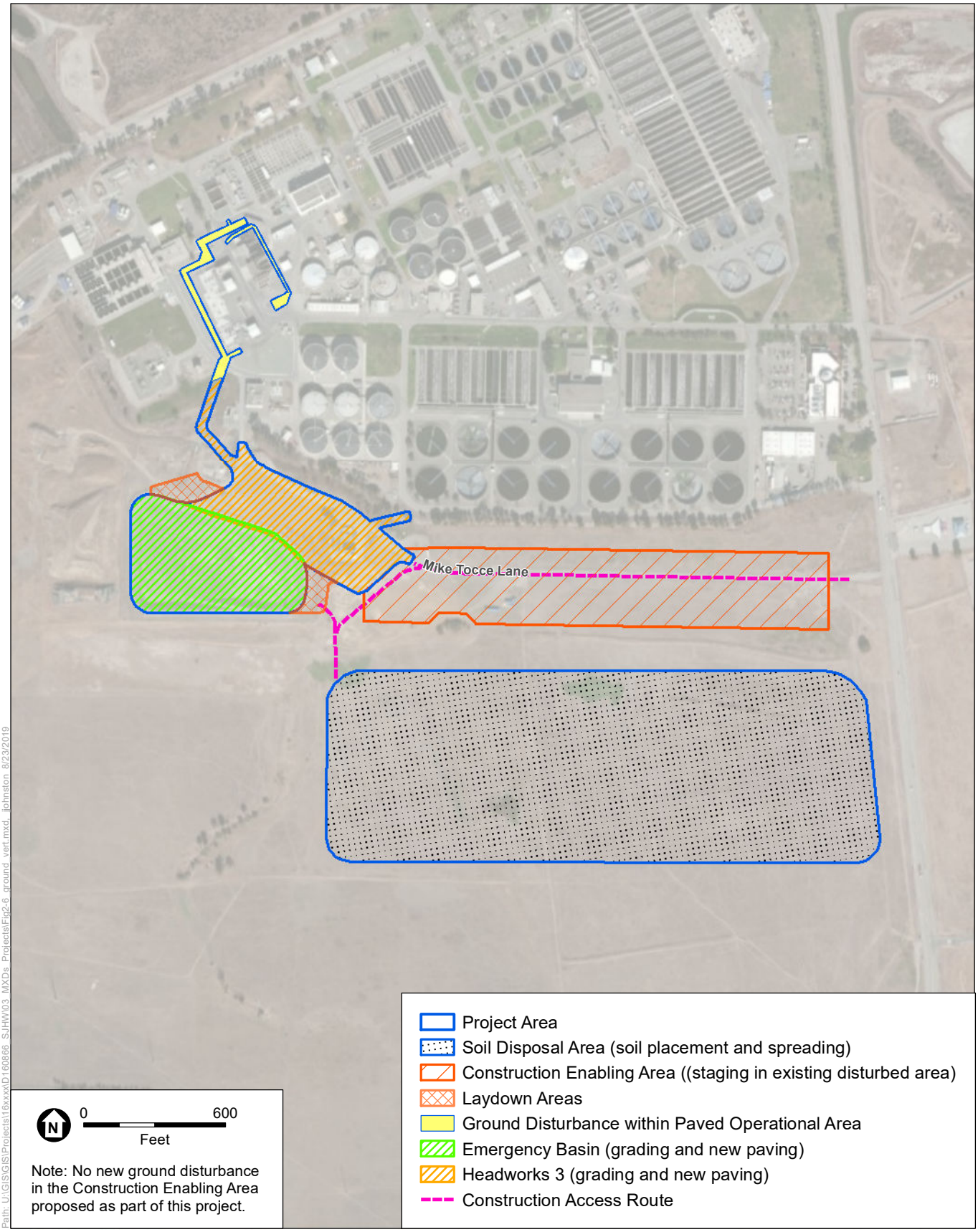
TABLE 2-2
SOIL AND DEMOLITION DEBRIS VOLUMES AND TRUCK LOAD ESTIMATES

Material Type	Construction Activity	Volume (cubic yards)	Total Truck Loads [a]
AC Pavement	Site Preparation	500	50
Demolition Debris	Demolition of Existing Screenings Handling Structure	570 concrete	70 (60 concrete demolition; 10 equipment and material removal)
Excavated Soil	Pipeline Construction	21,600[b]	1,800
Excavated Soil	Facilities Construction	28,600[b]	2,400

NOTES:
[a] Assumes one truck can haul 40,000 pounds of material.
[b] Loose volume.

SOURCE: Jacobs, 2019

[15] Sheet pile walls are retaining walls constructed using sections of sheet materials with interlocking edges that are driven into the ground to provide earth retention or excavation support. Sheet piles are most commonly made of steel, but can also be formed of timber or reinforced concrete.

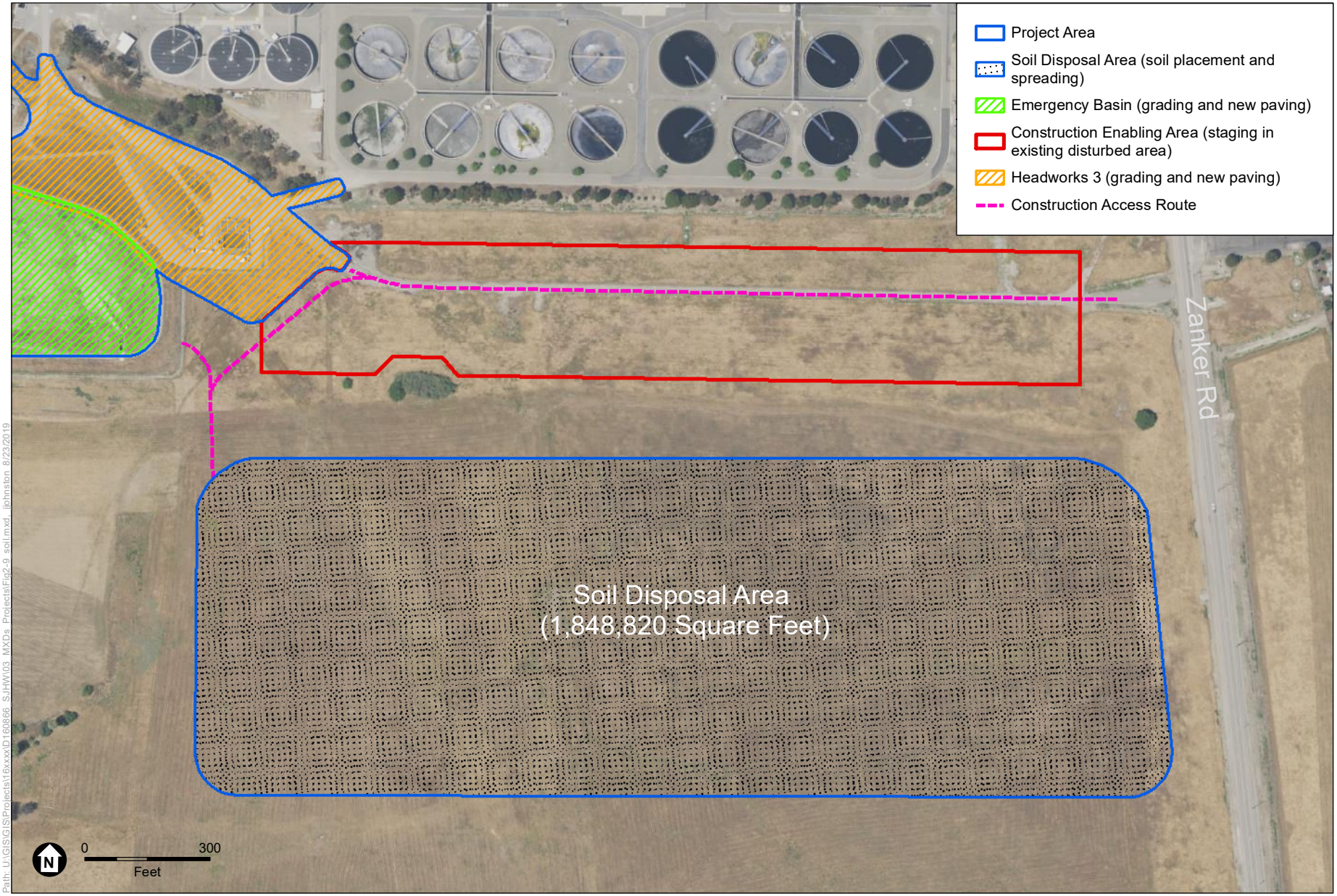


SOURCE: City of San Jose

San José Headworks Improvements and New Headworks

Figure 2-5
Areas of Ground Disturbance

ESA



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Service Layer Credits: Esri, USDA Farm Service Agency

San José Headworks Improvements and New Headworks

Figure 2-6

Soil Disposal Area and Access

ESA

*The Construction Enabling Area is shown for reference only. It is not part of the project area.

Pipeline Construction

As discussed in Section 2.5, Project pipelines would be installed between EBOS, the Headworks 3 facilities, and other facilities within the operational area.

Construction of the pipelines would involve moving pipelines and equipment to the correct location along the pipeline routes, removing existing asphalt concrete pavement, excavating trenches for the pipelines, welding and placing the pipelines ("stringing") and pouring concrete, and backfilling the trenches. Large diameter (greater than 4 feet in diameter) pipelines would be installed at a rate of approximately 20 feet per day; smaller diameter pipelines would be installed at approximately 100 feet per day. All pipelines would be constructed using open trench (i.e., cut and cover) or trenchless techniques. The approximate maximum depth of excavation for pipelines would be 25 feet below ground surface. Driven or drilled sheet piles may be installed to support excavations, where required.

The width of pipeline trenches would vary based upon pipeline diameter and depth, ranging from 3 feet wide for the smallest pipeline to 15 feet for the largest pipeline. Approximately 20 feet on either side of the pipeline trenches would be required for equipment use and pipeline storage during construction.

Similar to excavation of the Headworks 3 facilities, excavated material from pipeline installation would be temporarily stored onsite in the Construction Enabling Area prior to disposal or reuse. About 20,000 square feet within the Construction Enabling Area would be required to store the excavated material at any one time during pipeline excavation. Either excavated material (if suitable) or imported material would be used to backfill around the pipelines. Approximately 21,600 cubic yards of material requiring handling would be produced during pipeline construction, most of which, if suitable, would be used for backfill.

Once set in place, pipeline excavations would be backfilled and the ground surface restored to existing grade. Large-diameter pipelines would be covered by a minimum of six feet of fill material. Small-diameter pipelines would be covered by a minimum of three feet of fill material.

Other Facilities Construction

The Headworks 3 facilities, Pump Stations, and Emergency Basin would be constructed primarily of reinforced concrete. Construction activities for the Headworks 3 facilities and Pump Stations would include pouring concrete and backfilling around the concrete structures using imported fill material or suitable excavated material. Rehabilitation of the Emergency Basin would include excavation and re-compaction of the basin walls and floor, followed by installation of aggregate base covered by a 6-inch thick concrete liner on top of the entire existing basin up to the crest of the basin walls.

Paving, Finishing, and Testing and Start Up

After construction and backfilling is complete, paving would be replaced in areas where it had been removed for pipeline installations. A total of 4.3 acres of new paving would also be installed

surrounding the Headworks 3 facilities. The paving would require 70 trucks to import associated materials. During finishing work, testing, and start up, workers would test and start facilities, but no large equipment or materials would be needed.

2.7.3 Construction Staging and Truck and Delivery Access

The Project would use the Construction Enabling Area, located along Mike Tocce Lane and east of the Headworks 3 site, for equipment storage and worker parking. Areas north and east of, and immediately adjacent to, the Emergency Basin would also be used for equipment laydown (temporary storage) during facilities construction. These areas would not be graded. Construction vehicles would access the construction site and staging areas via Mike Tocce Lane through the entrance/gate on Zanker Road.

2.7.4 Construction Equipment

Table 2-3 identifies heavy construction equipment to be used for the Project.

TABLE 2-3
CONSTRUCTION EQUIPMENT

• Auger Drill Rig [a]	• Dump Truck	• Jackhammer (pneumatic)
• Backhoe	• 10-Wheel Dump Truck	• Pickup Truck
• Compressor	• Electric Welder	• Pneumatic Tools
• Concrete Mixer Truck	• Front End Loader	• Propane Forklift
• Concrete Paver	• Generators[b]	• Roller
• Concrete Pump and Truck	• Grader	• Thumper Soil Compactor (gas)
• Concrete/Industrial Saw	• Hydraulic Excavator	• Water Pumps
• Crawler Crane	• Impact Hammer	• Water Truck
• Dozer		

NOTES
[a] Pile driving would be accomplished using a crane and impact hammer.
[b] Four diesel generators would be used for the entire construction period.

SOURCE: Jacobs, 2019

2.8 Required Actions and Approvals

2.8.1 Federal

If the Project is found to potentially disturb waters of the United States, the following federal permits or approvals would apply:

- U.S. Army Corps of Engineers. Section 404 Nationwide Permit

2.8.2 State

If the Project is required to obtain Section 404 Clean Water Act authorization from the U.S. Army Corps of Engineers, the following state permits and approvals would apply:

- Regional Water Quality Control Board. Section 401/Report of Waste Discharge Requirements Permit.
- State Historic Preservation Officer (SHPO). Consultation between the U.S. Army Corps of Engineers and the SHPO would be required as part of the Section 404 process.

If the Project is found to disturb waters of the State of California, the following state permits or approvals would apply:

- California Department of Fish and Wildlife (CDFW). Lake and Streambed Alteration Agreement.

The Project may also require the following state permits and approvals:

- CDFW consultation in the event that avoidance of a western burrowing owl during the breeding season is infeasible.

2.8.3 Regional and Local

The Project may also require the following regional and local permits and approvals:

- Santa Clara Valley Habitat Conservation Plan. Habitat Plan permit and implementation of mitigation measures for western burrowing owl as identified in the Habitat Plan.
- Bay Area Air Quality Management District. Authority to Construct and Permit to Operate for the Headworks 3 facilities.

2.9 References

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

City of San José, 2017. CIP Program Study 14 Flow Management Study, July 25, 2017.

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CHAPTER 3
Evaluation of Environmental Impacts

Chapter 3 evaluates the direct and indirect effects of Project construction and operations on the physical environment. Impacts are assessed, and then compared to the impacts described in the Plant Master Plan EIR. A short statement comparing the Project's impact conclusion to the Plant Master Plan EIR impact conclusion, along with the Project's specific environmental impact conclusion in parentheses, follows each topic discussion.

The Project is located within the Plant Master Plan planning area in a different location than was evaluated in the Plant Master Plan EIR. The Plant Master Plan EIR considered the Headworks 3 site within the Facility Operational Area, but the Plant Master Plan Facility Improvements[16] did not propose any new structures at the Headworks 3 site. Since certification of the Plant Master Plan EIR, the Facility Operational Area boundary has shifted north to align with the existing paved areas of the Facility, as shown on figures in Chapter 2. The Soil Disposal Area is located in the existing plant buffer area. In the Plant Master Plan, Recreational and Plant Buffer land uses were designated for the Soil Disposal Area. While the Plant Master Plan did not include improvements at the Headworks 3 site or soil placement in the Soil Disposal Area, environmental impacts resulting from Plant Master Plan activities in areas surrounding the Headworks 3 site and in the Soil Disposal Area were evaluated in the Plant Master Plan EIR. The Plant Master Plan activities proposed for areas adjacent to the Headworks 3 site include Facility improvements to the northwest, north, and east, and roadway improvements to the south and west.

3.1 Aesthetics

3.1.1 Setting

The Project is located within the Plant Master Plan planning area. The setting of the Plant Master Plan area was described in the Plant Master Plan EIR, and for the purposes of aesthetics analysis the setting has not changed. As described in the Plant Master Plan EIR, no designated scenic vistas occur in the Project vicinity. There are no scenic highways located in the vicinity of the Project. Additionally, no rock outcroppings or historic buildings are located onsite or in the immediate vicinity of the Project, such that views of such resources could be affected. Project construction activity would occur in an area that is not highly visible from public viewpoints. Same as in the Plant Master Plan EIR, the nearest sensitive receptors consist of residences in the

[16] Called "WPCP Improvements" in the Plant Master Plan EIR.

Alviso Village area, residences along Ranch Drive, the George Mayne Elementary School, and the Don Edwards National Wildlife Refuge Environmental Education Center.

The City of San José is considered an urbanized area, as defined in CEQA Guidelines Section 15387, and as mapped by the U.S. Census. The Envision San José 2040 General Plan (2011) contains goals regarding visual resources; primarily concerning access to scenic resources (Goal CD-9) and maintaining attractive gateways within the City (Goal CD-10), particularly along loosely-defined "Grand Boulevards" and "Rural Scenic Corridors."

The City of San José's Municipal Code includes several regulations associated with protection of the city's visual character and control of light and glare. The zoning ordinance also includes development standards for each zoning district, which currently include standards for maximum building height and number of stories. The zoning ordinance also includes design standards regarding lighting (Title 20).

All new development is subject to a design review process that includes a review of architecture and site planning. Design review is based upon a series of guidelines prepared by the City's Planning Division and adopted by the City Council to assist those persons involved in the design, construction, review and approval of development in San José. Specific design guidelines applicable to the Project include those for industrial and commercial design, which are described in Section 4.15.2.3 of the Plant Master Plan EIR.

3.1.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The certified Plant Master Plan EIR identified the following impacts related to aesthetics:

- Less than significant impacts related to impacts on scenic resources, the visual character, or quality of the site and its surroundings specific to: the preliminary treatment facilities, the proposed land uses north of operational area; the roadway system connecting Nortech Parkway to Zanker Road, trails; and owl habitat and Artesian Slough riparian corridor located in the proposed land uses south and west of operational area; and the freshwater wetlands and eastern storm water channel, nature museum, light industrial, and trails for the proposed land uses east of operational area. The EIR also identified less than significant impacts related to the creation of a new sources of light and glare from all projects proposed in the Plant Master Plan.
- Significant and unavoidable impacts on scenic resources, the visual character, or quality of the site and its surroundings specific to: the economic development portion of the Plant Master Plan evaluated in the EIR; the recreational parks located in the proposed land uses south and west of operational area; and the flexible space for the proposed land uses east of operational area.

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, 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) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☒	☐

Discussion

a) The Plant Master Plan EIR concluded that construction and operation of all Facility improvements (including preliminary treatment facilities) and other proposed land uses in the Plant Master Plan would not have a substantial effect on a scenic vista because no designated scenic vistas occur in the vicinity of the Plant Master Plan area. As noted above, no new designated scenic vistas are present in the Project vicinity. This impact would be the same as identified in the Plant Master Plan EIR, and would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

b) As discussed in Section 3.5 of this document, a historic district is located within the paved operational area of the Facility. While the Project would include improvements to facilities near the historic district, the district is not visible from a state scenic highway and the Project would not affect the district (as discussed in greater detail in Section 3.5 of this document). There are no rock outcroppings located onsite or in the immediate vicinity of the Project that would be affected by the Project. Views of such resources from scenic highways therefore would not be affected by the Project. This impact would be the same as identified in the Plant Master Plan EIR, and would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

c) As discussed above, the Envision San José 2040 General Plan (2011) contains general goals regarding visual resources; primarily concern access to scenic resources (Goal CD-9) and maintaining attractive gateways within the City (Goal CD-10), particularly along loosely-defined “Grand Boulevards” and “Rural Scenic Corridors.” Discussion of potential effects on scenic corridors, such as those designated in the City’s General Plan are discussed in checklist item b) above, and were determined to be less than significant.

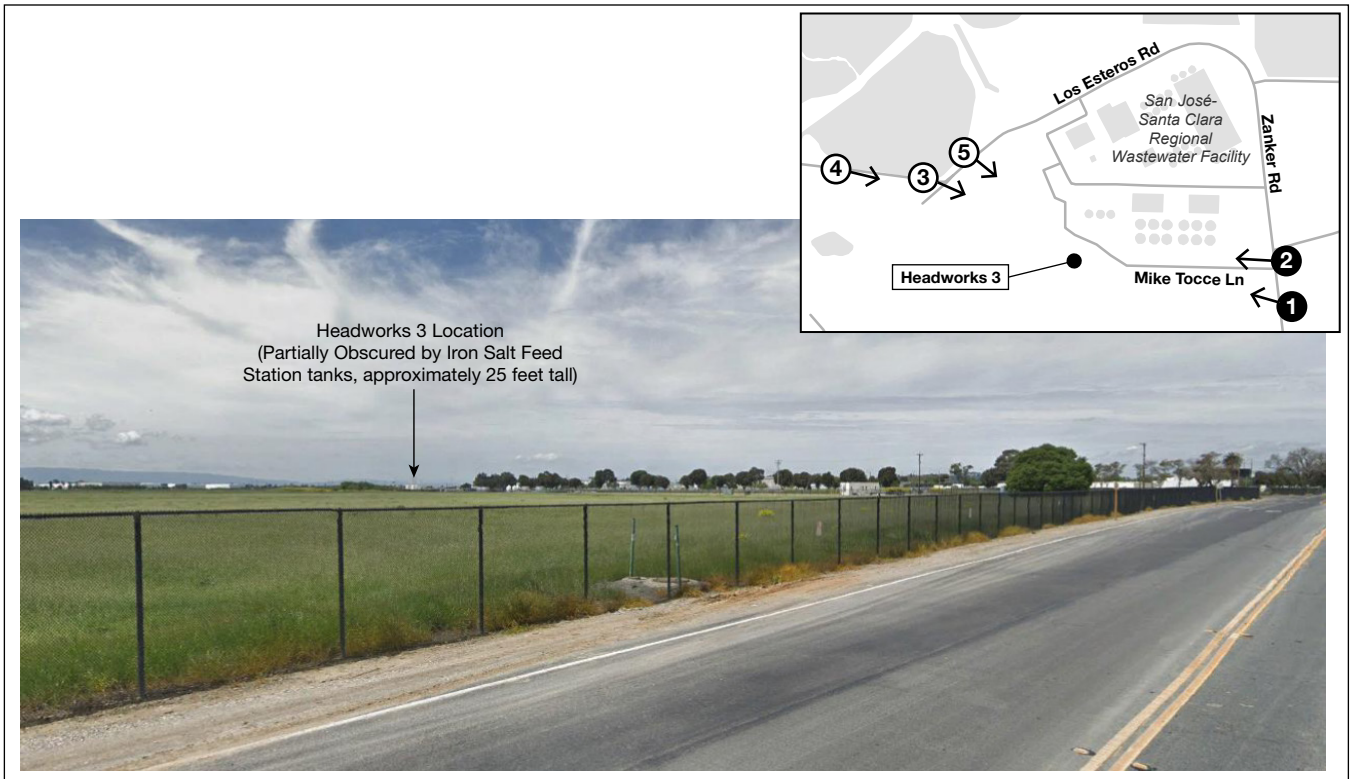
As discussed, views of the Project would not be visible from these vantage points. Access to the scenic resources associated with the scenic corridors would be maintained. Further, the 'attractiveness' of these corridors, as interpreted as 'gateways' would not be altered.

As discussed above, The City of San José's Municipal Code includes several regulations associated with protection of the city's visual character and control of light and glare. Light and glare associated with the Project is further discussed under checklist item d) below.

Given the limited scenic corridors and gateways in proximity to the Project and because the Project site is within an area with limited views in close proximity to non-urbanized areas located to the north, this analysis also considerers the potential for the Project to substantially degrade the existing visual character or quality of public views of the site and its surroundings.

The Plant Master Plan EIR evaluated visual quality and sensitivity of areas around the Plant Master Plan planning area, in order to then assess impacts of the Plant Master Plan on these views. Publicly accessible vantage points relevant to the Project were defined in the Plant Master Plan EIR and consist of Los Esteros Road and Zanker Road. The Project location is in an area where no above-ground structures were proposed in the Plant Master Plan EIR, and farther from both Zanker Road and Los Esteros Road than were other facilities evaluated in the Plant Master Plan EIR. The Plant Master Plan EIR concluded that public views of construction of facilities in this area from Los Esteros and Zanker Roads would be temporary, fleeting, and visually consistent with the working industrial character of the Facility and adjacent landfills, and that impacts of construction associated with these facilities would be less than significant.

As noted previously, the Project is located at a distance from Los Esteros and Zanker Roads and adjacent to the Facility operational area. As shown in **Figures 3.1-1** and **3.1-2**, during operations the Headworks 3 site would generally be obscured by existing facilities, vegetation, or topography from publicly accessible vantage points along Zanker and Los Esteros Road. Portions of the Headworks 3 facilities that are visible from Zanker or Los Esteros Roads would be consistent with the existing visual character in that area (25-foot tall tanks associated with the Iron Salt Feed Station) resulting in a less-than-significant impact on the quality of public views. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**



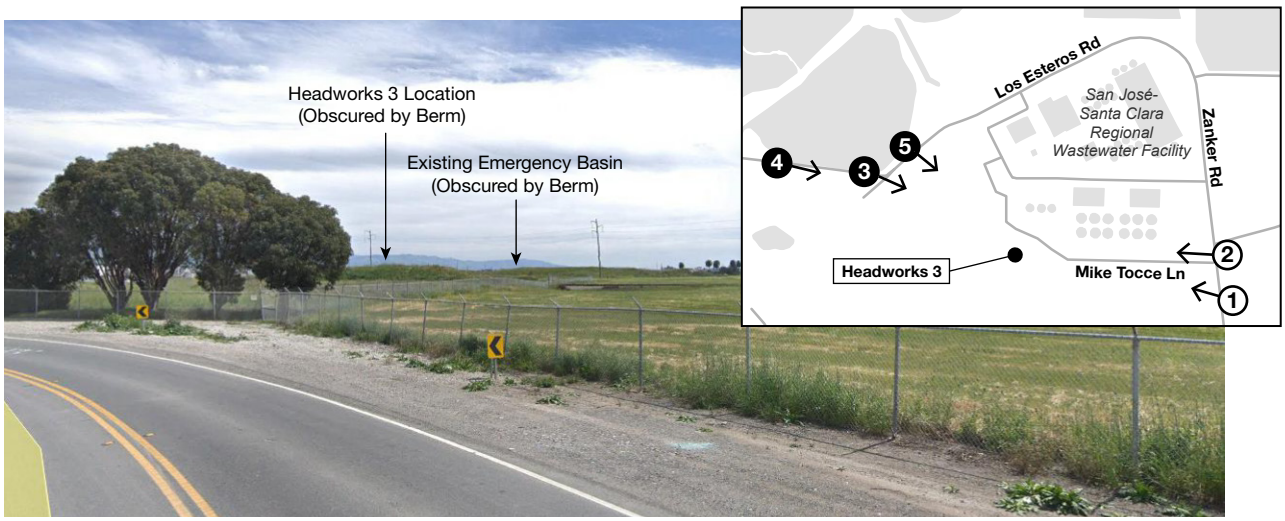
Publicly Accessible Vantage Point 1 (Zanker Road)

Publicly Accessible Vantage Point 2 (Zanker Road)

SOURCE: ESA, 2019; Google Earth, 2019

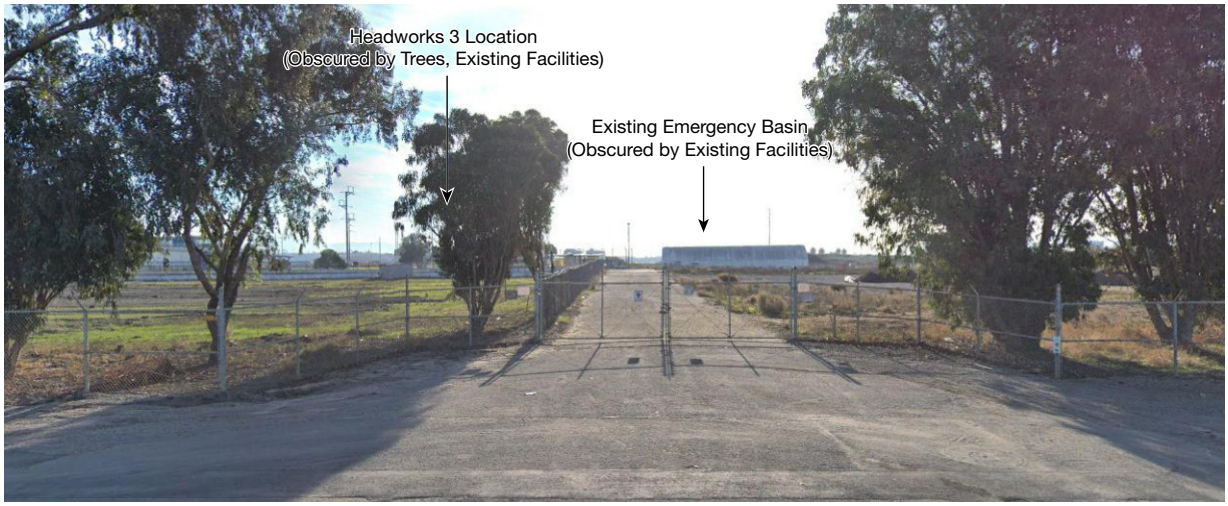
San José Headworks Improvements and New Headworks

Figure 3.1-1
Publicly Accessible Vantage Points (Zanker Road)



Publicly Accessible Vantage Point 3 (Los Esteros Road)

Publicly Accessible Vantage Point 4 (Los Esteros Road)



Publicly Accessible Vantage Point 5 (Los Esteros Road)

SOURCE: ESA, 2019; Google Earth, 2019

San José Headworks Improvements and New Headworks

Figure 3.1-2
Publicly Accessible Vantage Points (Los Esteros Road)

d) The Plant Master Plan EIR analyzed light and glare resulting from development of the Plant Master Plan area. As noted above, the Project would be located in an area where above-ground facilities were not proposed in the Plant Master Plan, and an area that is farther from publicly accessible vantage points (Zanker and Los Esteros Roads). The Project site is also 0.8-mile from the nearest sensitive receptor; at this location, views of the Project site are relatively distant.

As evaluated in the Plant Master Plan EIR for proposed Facility improvements located closer to Zanker and Los Esteros Roads, nighttime lighting used if construction were to continue into the night hours would be visible from Zanker and Los Esteros Roads. Los Esteros and Zanker Roads do not have sidewalks; public views would therefore be limited to those experienced by motorists or cyclists, and would be temporary and fleeting. Construction lighting therefore would not result in adverse effects on nighttime views.

Once operational, lighting at the Headworks 3 facilities would be used to operate critical water treatment facilities. As discussed above, the nearest sensitive receptors or active nighttime uses are located over 0.8 mile from the proposed Headworks 3 site. Due to this distance, lighting impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

City of San José, 2013. San José/Santa Clara Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

City of San José, 2018. Envision San José 2040 General Plan. Adopted November 1, 2011, Amended February 27, 2018.

3.2 Agriculture and Forestry Resources

3.2.1 Setting

The state and local land use and zoning designations with respect to agricultural and forest resources have not changed for the Project site and surroundings, and agricultural or forest use of the Project site has not commenced since adoption of the Plant Master Plan EIR. There are no lands on or adjacent to the Project site under a Williamson Act contract, or designated as farmland or forest land. Thus there has not been a substantial change in the circumstances of agricultural and forest resources at the Project site or surrounding areas.

3.2.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts on agriculture and forestry resources:

- No impacts associated with the Plant Master Plan resulting from the Project related to the conflict with existing zoning or cause rezoning of forest land, timberland, or timberland zoned Timberland Production. The EIR identified no impact from the Plant Master Plan related to the loss of forest land or conversion of forest land to non-forest use.
- Less than significant impacts related to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance along Coyote Creek and east of the Calpine energy facility. The EIR also identified less than significant impacts related to a zoning conflict for agricultural uses or with an existing Williamson Act contract due to restoration of Pond A18.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
II. AGRICULTURE AND FORESTRY 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?	☐	☐	☐	☒	☐

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
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-e) The Plant Master Plan EIR concluded that impacts to agricultural lands would be limited to areas east of Zanker Road. The Project would only occur west of Zanker Road, and would not alter land use of any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or lands subject to a Williamson Act contract, forest lands, or timberlands. The Project would not result in the construction of any facilities or other displacement, interference, or loss of agricultural or forest lands. Additionally, the Project would not alter other areas which could, directly or indirectly, result in the conversion of farmland or forest land to other uses. Therefore, impacts would be reduced compared to those identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

References

California Department of Conservation, Farmland Mapping and Monitoring Program, available at https://www.conservation.ca.gov/dlrp/fmmp. Accessed April 4, 2019.

City of San José, Planning, Building and Code Enforcement, available at http://www.sanjoseca.gov/index.aspx?NID=2037. Accessed April 4, 2019.

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

County of Santa Clara, Department of Planning and Development, available at https://www.sccgov.org/sites/dpd/programs/wa/pages/wa.aspx. Accessed April 4, 2019.

3.3 Air Quality

3.3.1 Setting

The air quality setting relevant to the Project site, including applicable regulations and air quality conditions, has not appreciably changed since the certification of the Plant Master Plan EIR. The Bay Area Air Quality Management District (BAAQMD) maintains regional authority for air quality management in the San Francisco Bay Area (Bay Area) which includes the Project area and vicinity. At the time of certification of the Plant Master Plan EIR, the BAAQMD's 2010 Clean Air Plan (CAP) was the applicable air quality plan in place to protect public health and climate in the Bay Area. In 2017, the *2017 Bay Area Clean Air Plan* (2017 CAP) was adopted to address nonattainment issues for the Bay Area. The 2017 CAP provides a regional strategy to protect public health and protect the climate by continuing progress toward attaining all state and federal air quality standards; eliminating health risk disparities from exposure to air pollution among Bay Area communities; transitioning the region to a post-carbon economy needed to achieve greenhouse gas (GHG) reduction targets for 2030 and 2050; and providing a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets. The 2017 CAP includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion (BAAQMD, 2017a).

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The Bay Area Air Basin experiences occasional violations of ozone and particulate matter (PM_{10} and $PM_{2.5}$) standards. Therefore, the Project area currently is designated as a non-attainment area for violation of the state 1-hour and 8-hour ozone standards, the federal ozone 8-hour standard, the state respirable particulate matter (PM_{10}) 24-hour and annual average standards, the state fine particulate matter ($PM_{2.5}$) annual average standard, and the federal $PM_{2.5}$ 24-hour standard. The Project area is designated as attainment for all other state and federal standards (BAAQMD, 2017c).

Sensitive receptors, as identified and discussed in the certified Plant Master Plan EIR, have not changed and remain applicable to the Project. There are no sensitive receptors (e.g., residences, schools) adjacent to or in the immediate vicinity of the Project area, and no hospitals, daycare centers, or long-term care facilities within one mile of the Project area. The closest sensitive uses are residences located approximately 3,800 feet (0.7 miles) south of the Project site and over 4,100 feet (0.8 miles) to the west. The closest school is the George Mayne Elementary School located approximately 5,000 feet to the west.

3.3.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan. The Plant Master Plan EIR identified the following impacts related to air quality:

- Less-than-significant impacts related to implementation of the Master Plan for the potential to violate air quality standards during operation, exposure of sensitive receptors to substantial pollutant concentrations, and objectionable odors.
- Significant and unavoidable impacts related to implementation of the Master Plan for the potential to conflict with the applicable air quality plan and for the potential to violate air quality standards during construction as project-related construction emissions, even with mitigation measures incorporated, were found to exceed the identified significance thresholds.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
III. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management district 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) 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?	☐	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒	☐

Discussion

a) The Plant Master Plan EIR concluded that construction of the Plant Master Plan would conflict with the air quality plan because average daily construction emissions of NOx would exceed the thresholds set by the air quality plan.

As discussed in Section 3.3.1, a new air quality plan was adopted after certification of the Plant Master Plan EIR The BAAQMD CEQA Guidelines recommend 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 a project would be consistent with the above three criteria, then the BAAQMD considers it to be consistent with air quality plans prepared for the Bay Area (BAAQMD, 2017b).

The primary goals of the 2017 CAP are to attain air quality standards, reduce population exposure and protect public health in the Bay Area, and reduce GHG emissions and protect the climate. The BAAQMD-recommended guidance for determining if a project supports the goals in the current air quality plan is to compare estimated project emissions with BAAQMD thresholds of significance. If project emissions would not exceed the thresholds of significance after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 CAP. As indicated in the following discussion with regard to air quality item b), the Project would result in a less-than-significant impact related to construction emissions with the implementation of the BAAQMD's applicable recommended fugitive dust control measures, which are included in the City's project conditions of approval. Therefore, the Project would be considered to support the primary goals of the 2017 CAP.

The 2017 CAP contains 85 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 CAP. Two of the stationary source control measures are applicable to operation of water pollution control plants: WR1 (Limit GHGs from Publicly-Owned Treatment Works [POTWs]) and WR2 (Support Water Conservation). While both of these measures do not contain specific emissions control strategies, the Project would not be inconsistent with these measures as the Project would not affect methane capture at the Facility, would not affect production of recycled water at the Facility, and would not install combustion engines. For these reasons, the Project would not be inconsistent with nor hinder implementation of the 2017 CAP control measures.

In summary, the Project would be consistent with all three criteria listed above to evaluate consistency with the 2017 CAP and, therefore, would not conflict with or obstruct implementation of the 2017 CAP. This impact would be the same as identified in the Plant Master Plan EIR, and would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

b) According to the BAAQMD, no single project will, 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 conditions (BAAQMD, 2017b). 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 above in Section 3.3.2, the Plant Master Plan EIR disclosed significant and unavoidable impacts related to the potential to conflict with an applicable air quality plan and potential to violate air quality standards during construction of projects in 2015 (which at the time included construction of the Headworks improvements). Therefore, the contribution of the approved Plant Master Plan to cumulative air quality was also concluded as being significant. The Project's individual contribution to the cumulative air quality of the area has to be evaluated below by comparing its construction and operational emissions to the applicable BAAQMD thresholds.

Construction

Construction activities associated with the Project would involve use of equipment that would emit exhaust containing ozone precursors (reactive organic gases or ROG, and nitrogen oxides, or NO_x). On-site and off-site vehicle activity associated with material transport and construction worker commutes 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. Criteria pollutant emissions of ROG and NO_x from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during Project construction.

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 the OFFROAD2017 emission factors along with the Project-specific construction schedule and equipment requirements that would be used Project construction. Emissions from vehicle trips associated with construction such as worker commute trips, material delivery and hauling truck trips were estimated using EMFAC2017 emission factors. All assumptions and calculations used to estimate the Project-related construction emissions are provided in **Appendix B**.

Project construction emissions were estimated assuming that construction would take place from February 2020 to July 2022 and would take approximately 619 workdays to complete over a period of approximately 28 months. Average daily construction emissions were estimated by dividing the total construction emissions by the number of workdays. Estimated average daily emissions are shown in **Table 3.3-1** (below) and are compared to the BAAQMD thresholds.

TABLE 3.3-1
AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (POUNDS/DAY)

Emissions	ROG	NOx	Exhaust PM10*	Exhaust PM2.5*
Project Construction Emissions	3.1	29.1	1.6	1.3
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

NOTES:
[a] BAAQMD's construction-related significance thresholds for PM_{10} and $PM_{2.5}$ apply to exhaust emissions only and not to fugitive dust.

SOURCE: Appendix B

As indicated in Table 3.3-1, the average daily construction exhaust emissions would not exceed the BAAQMD's significance thresholds. Therefore, impacts associated with the potential for construction-related exhaust emissions to result in or contribute to a violation of an air quality standard would be less than significant.

In addition to exhaust emissions, emissions of fugitive dust would also be generated by construction activities associated with grading and earth disturbance, travel on paved and unpaved roads, etc. Such emissions could result in a potential significant impact. With regard to fugitive dust emissions, the BAAQMD Guidelines focus on implementation of recommended dust control measures rather than a quantitative comparison of estimated emissions to a significance threshold. For all projects, the BAAQMD recommends the implementation of its *Basic Control Mitigation Measures* (BAAQMD, 2017b). These measures would be implemented by the Project as part of the City's project conditions of approval, and are listed below.

BAAQMD Basic Control Mitigation Measures

During Project construction, the City, through its construction contractor(s), shall ensure that the following BAAQMD construction control measures are implemented.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- 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.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- 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.
- 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.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- 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.

These measures were also included in the Plant Master Plan EIR as Mitigation Measure AQ-1. The Project would implement these measures, and therefore would not lead to violations of the air quality standards due to construction fugitive dust. This impact would be less than significant, and would not result in any new or more

significant impacts beyond those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

Operation

The Project would not need any additional staff at the Facility. The Plant Master Plan EIR projected that overall Facility operations would require an additional 28 round trips per week.[17] The Plant Master Plan concluded that the additional 28 round trips per week would not exceed the BAAQMD's significance thresholds. The Project would not change the projected capacity of the Headworks Facilities compared to the capacity evaluated in the Plant Master Plan EIR. At the projected capacity of the Headworks facilities, up to 8 additional round trips per week to haul screenings and grit would occur, lower than the number of additional trips evaluated in the Plant Master Plan EIR. For this reason, the project would not result in additional new criteria air pollutant emissions during operations. This would be a less-than-significant impact, similar to the operational impact identified in the certified Plant Master Plan EIR.

As discussed above, the Plant Master Plan EIR disclosed significant and unavoidable impacts related to the potential to conflict with an applicable air quality plan and potential to violate air quality standards during construction of projects in 2016. Therefore, the contribution of the approved Plant Master Plan to cumulative air quality was also described as being significant. However, given the low level of average daily emissions associated with Project construction (shown in Table 3.3-1 above) well below the BAAQMD significance thresholds, the Project's contribution to the cumulative air quality impact in the area would be less than the impact disclosed in the Plant Master Plan EIR, which identified a significant and unavoidable cumulative impact. The Project would not result in any new or more significant impacts beyond those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

c) Toxic Air Contaminants

Construction activities associated with the Project would result in the generation of exhaust emissions that contain air pollutants, including particulate matter (PM_{10} and $PM_{2.5}$), the majority of which would be diesel particulate matter (DPM); a known toxic air contaminant (TAC). Exposure of sensitive receptors to TAC emissions could result in an elevated health risk. Under the California Environmental Protection Agency guidelines, DPM is used as a surrogate measure of carcinogen exposure for the mix of chemicals that make up diesel exhaust as a whole.

The nearest off-site sensitive receptors are located approximately 3,800 feet from the Project site. The BAAQMD has identified a distance of 1,000 feet from the source to the closest sensitive receptor locations within which community health risk impacts are likely (BAAQMD, 2017b). Construction sources would be separated from the nearby receptors

[17] Refer to Plant Master Plan EIR Appendix F. Characterized as "up to four round trips each day for 365 days per year."

by a distance of at least 3,800 feet, which would help reduce exposure. Furthermore, as shown in Table 3.3-1, PM_{10} and $PM_{2.5}$ emissions associated with construction of the Project would be 1.6 and 1.3 pound per day, respectively. At these emission levels and with the large buffer distance separating the sources and receptors, short-term construction activities extending over a duration of 28 months would not lead to a new significant increase in health risk from exposure to TACs. Therefore, the impact of exposure of sensitive receptors to pollutants would be less than significant, same as identified in the certified Plant Master Plan EIR, and no new or more significant impacts beyond those identified in the Plant Master Plan EIR would result. **Same Impact as Approved Project. (Less than Significant)**

Criteria Air Pollutants

The Project would generate criteria pollutant emissions ROG, NOx, and particulate matter, as discussed under checklist question b); however, the impacts of these emissions on sensitive receptors are harder to quantify. Given that ozone formation occurs through a complex photo-chemical reaction between its precursors NO_X and ROG in the atmosphere with the presence of sunlight, the impacts of ozone are typically considered on a basin-wide or regional basis instead of a localized basis. The health-based ambient air quality standards for ozone therefore are as concentrations of ozone and not as tonnages of their precursor pollutants (i.e., NO_X and ROG). It is not necessarily the tonnage of precursor pollutants emitted that causes human health effects, but the concentration of resulting ozone or particulate matter. Because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is infeasible to convert specific project level emissions of NO_X or ROG emitted in a particular area to concentration of ozone in that area. Meteorology, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone (SCAQMD, 2014; SJVAPCD, 2014). Since the Project would not exceed the numeric indicator for ROG and NO_X emissions during either construction or operation, it is not likely that Project ROG and NO_X emissions could result in an increase in ground-level ozone concentrations in proximity to the Project sites or elsewhere in the air basin and impacts can be considered less than significant. **Same Impact as Approved Project. (Less than Significant)**

As expressed in the *amicus curiae* brief submitted for the *Sierra Club v. County of Fresno* case (also known as the *Friant Ranch Case;* SJVAPCD, 2014), the CEQA significance thresholds for criteria pollutants from the air district were set at emission levels tied to the region's attainment status, and are emission levels at which stationary pollution sources permitted by the air district must offset their emissions. The CEQA project must use feasible mitigations in order for the region to attain the health based ambient air quality standards. Therefore, given that the Project would not exceed the mass emissions thresholds established by the BAAQMD, it is not likely that emissions from Project-related activities will cause or contribute to the exposure of sensitive receptors to ground-level concentrations in excess of health-protective levels.

The primary health concern with exposure to NO_X emissions is the secondary formation of ozone. As the *amicus curiae* briefs submitted for the *Sierra Club v. County of Fresno* case suggested, and as was stated above, because of the complexity of ozone formation, and given the state of environmental science modeling in use at this time, it is infeasible to determine whether, or to what extent, a single project's precursor (i.e., NO_X and ROG) emissions would potentially result in the formation of secondary ground-level ozone and the geographic and temporal distribution of such secondary formed emissions. Furthermore, available models today are designed to determine regional, population-wide health impacts, and cannot accurately quantify ozone-related health impacts caused by NO_X or ROG emissions from local level (project level). Notwithstanding these scientific constraints, the disconnect between Project level NO_X emissions and ozone-related health impact cannot be bridged at this time.

d) The Plant Master Plan EIR evaluated the odor impacts associated with the increase in wastewater flows anticipated for the Facility to 2040. As noted in Chapter 2 of this document, estimated wastewater flows to the Facility are expected to be lower than estimated at the time of Plant Master Plan EIR certification.

The Plant Master Plan EIR concluded that the Plant Master Plan would not substantially increase the potential for exposure of nearby residents and land uses to objectionable odors because odor control features would be installed and because there were no BAAQMD-confirmed Facility-related odor complaints. Instead of installing new odor control at the existing headworks facility, the Project would install new odor control at the new Headworks 3 facility, located about 1,000 feet southeast of the existing headworks facility. The BAAQMD recommends screening distances for various odor-generating facilities. If a project would include the operation of an odor source, the screening distances should be used to evaluate the potential impact to existing sensitive receptors. The BAAQMD recommends that the screening distances be used as indicators of how much additional analysis would be required rather than the sole indicator of impact significance. The BAAQMD-recommended odor screening distance for wastewater treatment plants is two miles (BAAQMD, 2017b). The closest residences to the Project site are located approximately 3,800 feet (0.7 miles) to the south. Residences to the west are farther away at over 4,100 feet (0.8 miles) from the southern boundary of the Project site. Winter winds in the Project area tend to be southwesterly and southeasterly and summer winds tend to be westerly which could carry odorous emissions from the Project to the north and east as a result of the Project. As there are no residences to the north, residential areas to the east are most likely to be affected.

The Headworks 3 facilities would generate odorous emissions from the raw sewage pumping channels and wet well and grit tanks. Grit and screenings dumpsters, septage receiving and the screenings washer would also generate odors. The Project would include installation an odor control system at the Headworks 3 site which would vent the foul air from the process areas to the adjacent odor control facility where it would be treated using a biotrickling filter.

An air dispersion modeling analysis was conducted by Jacobs (included as **Appendix C**) to inform odor management planning for the Project and to provide improved understanding of the relative odor impacts. The analysis considered the difference in odor dispersion between the location of preliminary treatment facilities proposed in the Plant Master Plan EIR and the location of the proposed Headworks 3 site, as well as the combined impact of odor from all sources at the Facility plus the proposed Headworks 3.

The analysis evaluated the design options for the Project and compared results against the BAAQMD regulatory limits for offsite exposures of hydrogen sulfide (H_2S),[18] the Occupational Safety and Health Administration (OSHA) limits for onsite exposures of H_2S, and City-selected limits for offsite odor exposures. The modeling analysis included an evaluation of odor impacts assuming odor treatment with a biotrickling filter to identify any:

- Potential worker health and safety issues;
- Compliance issues with BAAQMD permits and regulatory requirements; and
- Compliance issues with applicable OSHA standards.

As odor is generally measured by perception of the receptor rather than as a chemical concentration, dilutions to threshold (D/T)[19] was used for the odor modeling. An odor threshold of five D/T (1-hour duration, 99 percent frequency with 3-minute peaking factor) was selected for the Project which is consistent with the Plant Master Plan, Plant Master Plan EIR, the CH_2M Odor and Corrosion Control Study (CH2M, 2015), and BAAQMD regulatory standards. Different regulatory standards apply to the general public (BAAQMD Regulation 9, Rule 2) and to workers exposed inside the fence line (OSHA regulations). Therefore, the impact assessment modeled odor and H_2S both outside (off-site receptors) and inside of the fence line (employees).

AERMOD, the U.S. Environmental Protection Agency's (USEPA) preferred and recommended air dispersion model, was used to evaluate how odors and H_2S migrate and disperse downwind from the sources to offsite receptors and onsite workers based on source location, release height, terrain, building downwash and weather. Odor conditions with the new Headworks next to the existing headworks facilities was used as the baseline for this assessment.

[18] Hydrogen sulfide is a byproduct of biological reduction of sulfates and decomposition of organic material in wastewater and forms a dominant component of odor at wastewater treatment plants. It is generated at nearly every point in the wastewater treatment process.

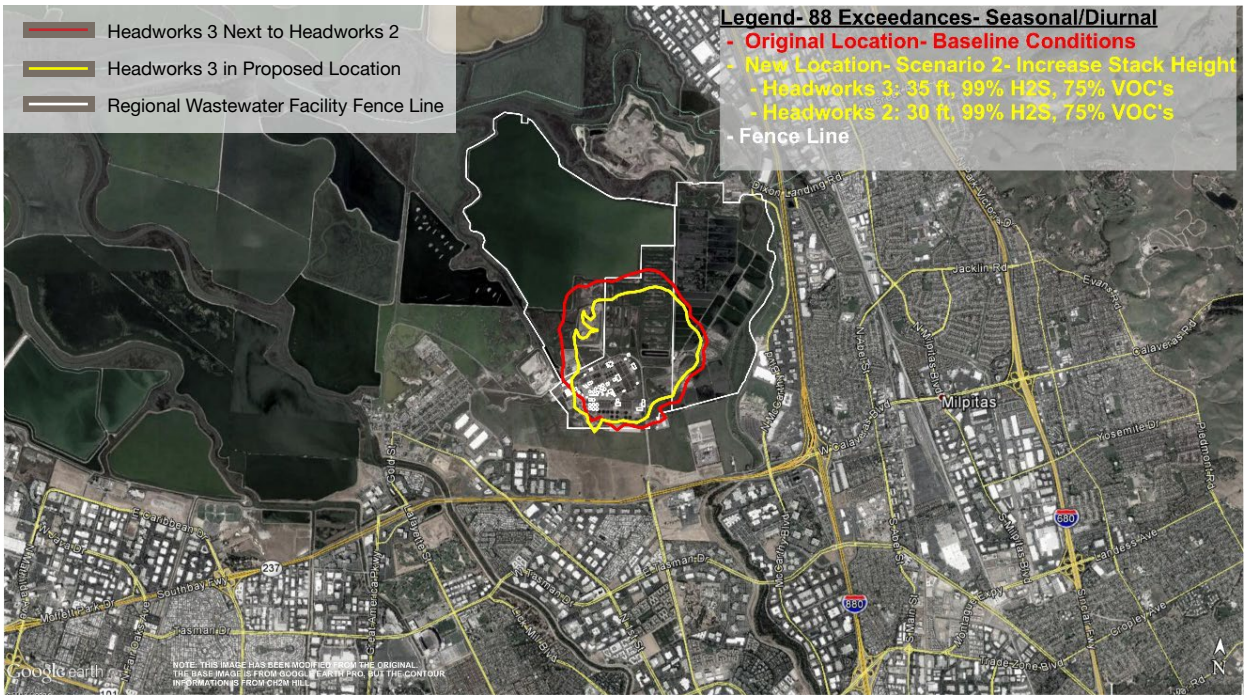
[19] To measure an odor, the odorous sample is diluted with odor free air to reach a threshold, which is the concentration of the odor in air when 50 percent of a population can detect the odor in the odorous sample. The numerical value of the odor concentration is equal to the dilution factor that is necessary for the odorous sample to reach the odor threshold and is expressed as Odor Units (OU) or Dilution-to-Threshold ratio (D/T). The odor concentration at the odor threshold is one OU or one D/T by definition. Therefore, the measure of the odor concentration of a sample is the number of dilutions with odor free air required to reach 1 D/T.

Figure 3.3-1 shows the odor contours for the Project scenario compared with odor contours of the baseline scenario. These contours represent odor "isopleths" connecting locations where the odor goal is exceeded. The odor goal refers to complying with the adopted odor goal criteria (5 D/T, 1-hour duration, 99 percent frequency with 3-minute peaking factor) at the fence line. This odor goal has been used by the City in implementing odor control projects. The isopleths shown in Figure 3.3-1 represent the extent of offsite locations where the odor goal criterion is exceeded for more than 88 hours in the year. Exceedance for 88 hours in a year corresponds to compliance with the 99 percent frequency criterion of the 5 D/T threshold and 3-minute peaking factor. Because odor has a cumulative impact, odor modeling for the Project also included other sources at the Facility, taking into account the planned odor treatment associated with those sources (shown on the bottom of Figure 3.3-1).

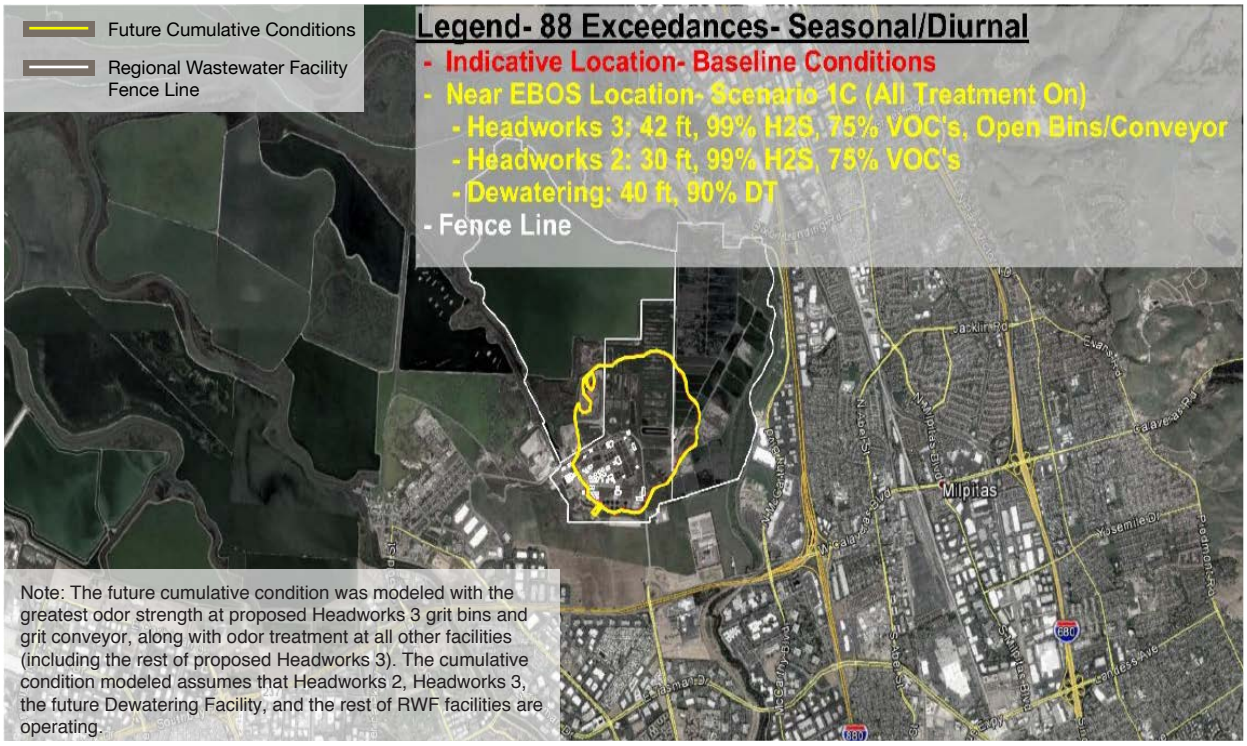
As shown in Figure 3.3-1, the odor contour for the Project scenarios would be well within the Facility boundary and not affect any sensitive receptors surrounding the Facility.

One of the objectives of the Plant Master Plan is to reduce odor impacts from Facility operations. Consistent with this goal, the new Headworks facility would include a biotrickling filter with an exhaust tower and dispersion fan installed adjacent to the proposed Headworks pumps to provide odor control (refer to Figure 2-2 in Chapter 2). In its guidance to Bay Area agencies regarding air quality improvement methods, the BAAQMD identifies carbon adsorption, biofiltration (such as biotrickling filters), and ammonia scrubbers as effective methods to reduce odor impacts from wastewater treatment plants (BAAQMD, 2017b). As described above, modeling conducted for the Project in the proposed location indicates that average and peak operations of the Project would meet the regulatory standard set by the BAAQMD for odor generation (Jacobs, 2019).[20] Odors from the Headworks facilities both inside and outside the Facility boundaries are expected to improve compared to existing conditions, and Headworks 3 at the proposed location would not exceed the adopted odor goal criteria outside the Facility fenceline. The Project would not result in any new or more significant odor impacts beyond those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

[20] The BAAQMD regulatory standard is a dilution to threshold ratio of 5 at the Facility fence line boundary. The term "dilution to threshold" refers to the amount of pure air that must be added to a known volume of odorous air in order to dilute the sample to the concentration at which the odor can just be detected.



Future Odor Concentration Isopleths - Comparison of Two Headworks Locations



Future Cumulative Odor Concentration Isopleths at the RWF

SFO\16xxxx\D160866.01 - SJ Headworks\05 Graphics-GIS-Modeling\Illustrator

SOURCE: Jacobs, Final Basis of Design Report, May 2019

San José Headworks Improvements and New Headworks

Figure 3.3-1
Comparison of Future Odor Concentration Isopleths for Two Locations of Headworks 3

References

Bay Area Air Quality Management District (BAAQMD), 2017a. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

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Jacobs, 2019. Draft Basis of Design Report, January 15.

South Coast Air Quality Management District (SCAQMD), 2014. Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno.

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2014. Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno.

3.4 Biological Resources

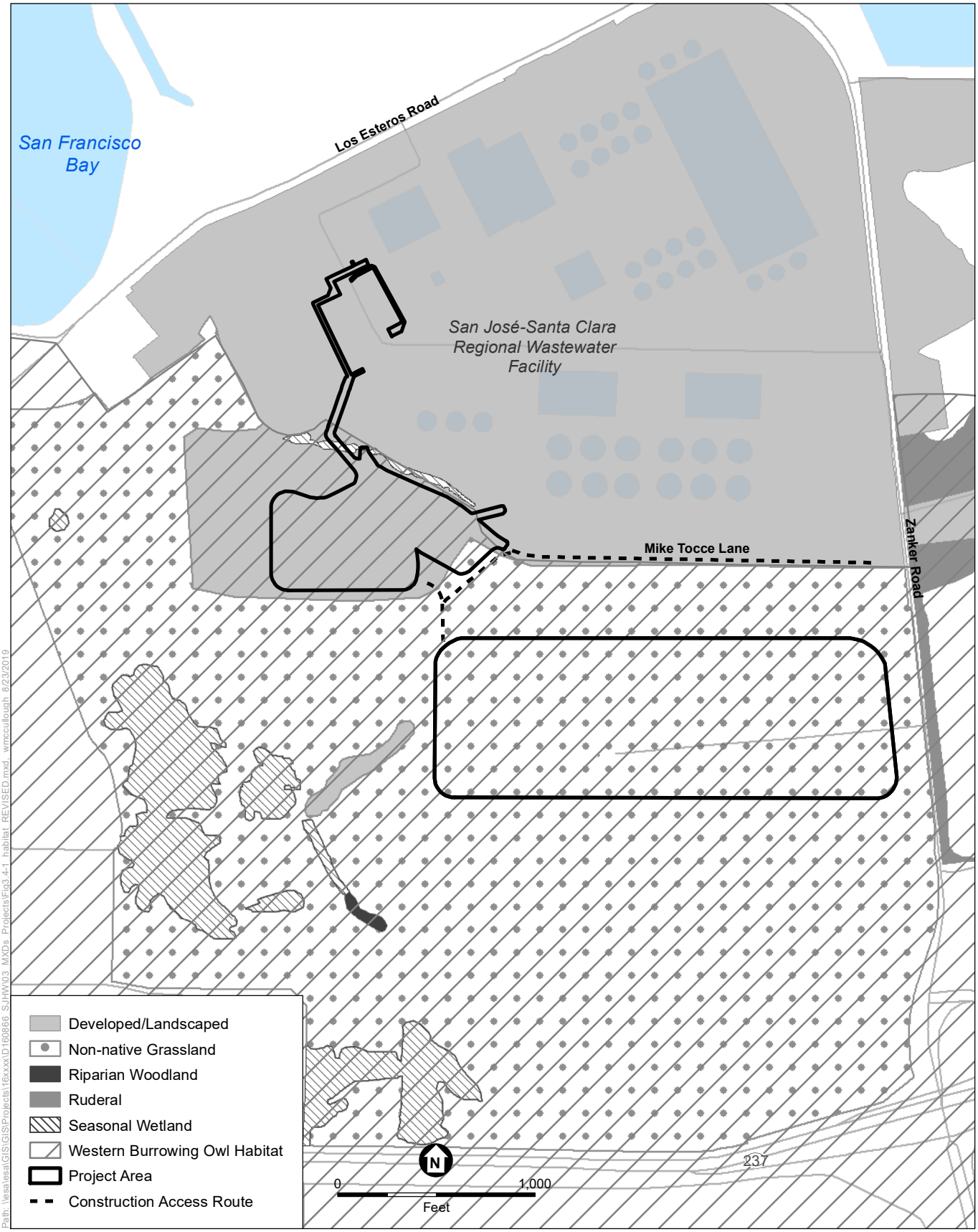
3.4.1 Setting

Biological resources located within the Project site reflect a portion of the same resources described in the certified Plant Master Plan EIR, with the exception of biological resources within the drainage channel (which was considered part of the developed Operational Area in the Plant Master Plan EIR; refer to **Figure 3.4-1**). The biological resources regulatory setting relevant to the Project site, including applicable regulations and conditions of sensitive habitats and natural communities such as wetlands, and special status plant and wildlife species, has not appreciably changed since the adoption of the Plant Master Plan EIR. Biological communities present within the Project site include nonnative annual grassland, ruderal, developed/landscaped areas, including paved and unpaved roads, mown/maintained areas, and existing facilities, which support weedy forbs, grasses, and limited wildlife. In addition, wetlands and other waters, including seasonal wetlands and associated vegetation, are present in the Project site (**Figure 3.4-2**). There is no hydrologically-dependent shrub and tree community, and hence no riparian habitat is present within the Project site. Setting discussions from the certified Plant Master Plan EIR for biological resources in the Project site are otherwise applicable to the Project.

Special-status species lists for this analysis were re-generated and derived from the California Department of Fish and Wildlife (CDFW) and California Native Plant Society (CNPS) for the Mountain View, Milpitas, Calaveras Reservoir, Niles, San José West, and Newark 7.5-minute U.S. Geological Survey quadrangles; and United States Fish and Wildlife Service (USFWS) special-status species that could potentially be affected by the Project (CDFW, 2019; California Native Plant Society, 2019; USFWS, 2019). In addition, findings of the certified Plant Master Plan EIR surveys and literature review were used to compile the list of special-status species that may occur in the Project site. The compiled list of special-status species with the potential to occur in the Project area is displayed in **Appendix D**.

Since certification of the Plant Master Plan EIR, additional surveys of areas south of the paved operational area have been conducted, including in and adjacent to the Headworks 3 site. A potentially jurisdictional drainage feature in the Project site was identified by ESA biologists while conducting a wetland delineation and top of bank determination for the Iron Salt Feed Station Project on March 6, 2015 (ESA, 2015). A portion of this feature was surveyed from a point immediately east of Mike Tocce Lane Roadway Bridge to approximately 50 feet west of the Roadway Bridge. This feature is shown on Figure 3.4-2. The site reconnaissance survey for the proposed Headworks Alternatives mapped the continuation of the drainage feature further west of the Roadway Bridge within the area under the Project (ESA, 2016). In addition, a preliminary wetland delineation of the drainage, within the Project site, was completed on August 10, 2017 (ESA, 2017). The feature borders the western edge of the Facility operational area.

The drainage feature is in the bottom of a channel that has been altered and realigned. A channel at the location is indicated on topographic maps prepared before extensive development in the area. Downstream of the study area, surface connection to its tidal reach and San Francisco Bay is blocked by earthen barriers. A portion of the drainage feature is within 1,500 feet of the high tide



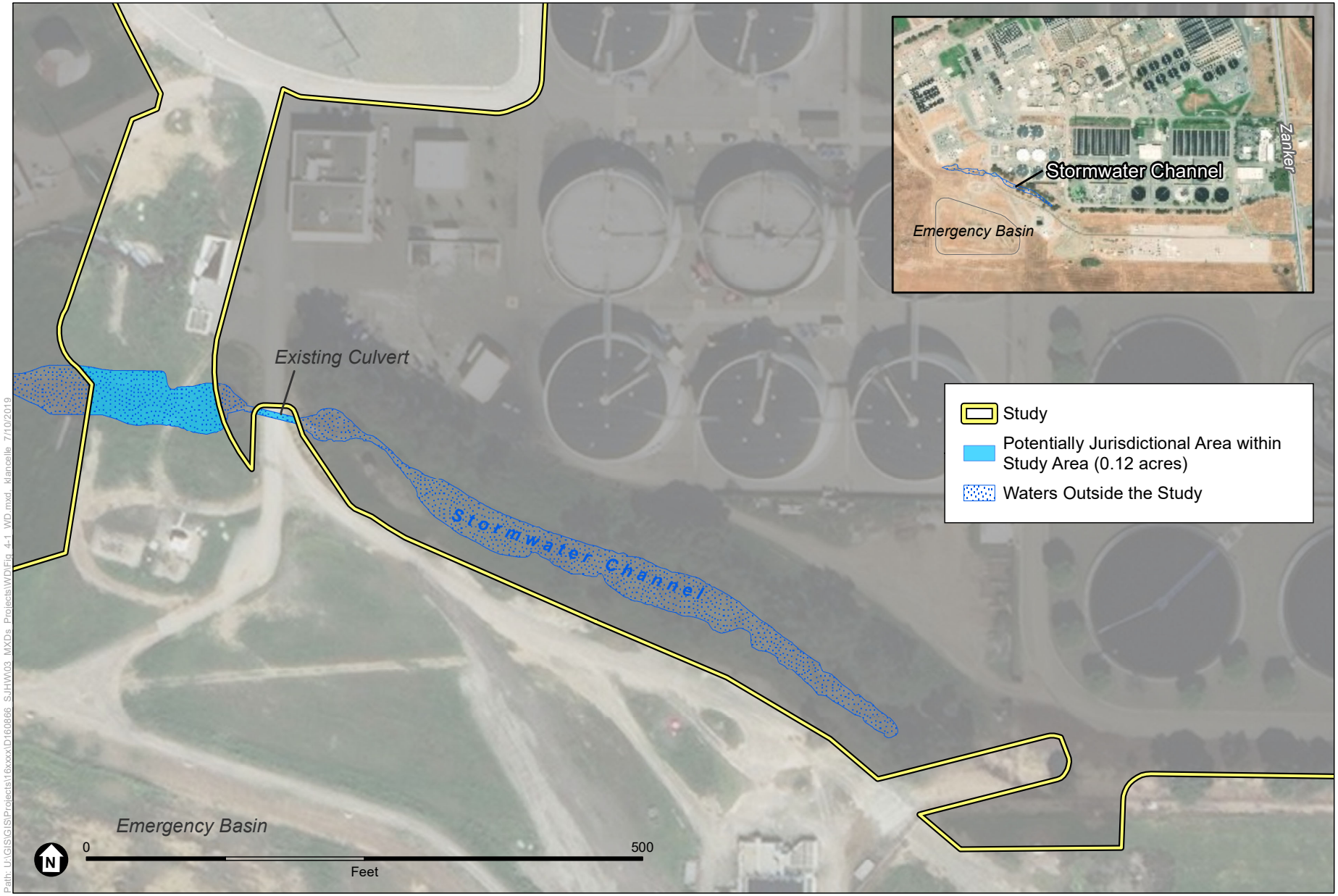
SOURCE: ICF, 2013; ESA, 2019

San José Headworks Improvements and New Headworks

NOTE: Western burrowing owl habitat area shown is the Habitat Plan Burrowing Owl Fee Zone, which is delineated based on presence of relevant species habitat.

Figure 3.4-1
Habitats in the Project Vicinity

ESA



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ESA 2019

San Jose Headworks Improvements and New Headworks

Figure 3.4-2

Potentially Jurisdictional Waters of the U.S.

ESA

line of a downstream water; due to the proximity to the high tide line of San Francisco Bay, the drainage feature meets the definition of adjacent and neighboring, and is a potential waters of the U.S. Therefore, portions of the drainage feature within the Project site are considered waters of the USACE regulatory authority under Section 404 of the CWA, and the RWQCB under Section 401 of the CWA. In addition, all parts of this drainage channel between the top of bank are waters of the state, and also are subject to RWQCB regulation under Porter–Cologne and CDFW under Section 1600 et seq. of the California Fish and Game Code. Typical CDFW jurisdiction under Section 1600 of the California Department of Fish and Game Code is within the "Top of Bank" boundaries of a stream channel; however, CDFW may assert regulatory authority over activities that affect fish and wildlife habitat associated with the stream which would increase their jurisdictional boundary.

Short-term impacts to wetlands and other waters, including seasonal wetlands, streams and associated vegetation, require the appropriate permits from regulatory agencies. The Army Corps of Engineers (USACE) regulates discharges of fill to jurisdictional wetlands and other waters under Section 404 of the Clean Water Act. Wetlands and other waters that fall under the jurisdiction of the Corps also are regulated by the Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act (CWA). The RWQCB also regulates a broader array of jurisdictional waters of the state under the Porter-Cologne Water Pollution Quality Control Act (Porter-Cologne). The CDFW regulates alteration of the bed or bank of streams or associated wildlife habitat under Section 1600 of the California Fish and Game Code. Impacts to jurisdictional wetlands and other waters are considered potentially significant under CEQA, requiring mitigation, and any impacts to the waters or streambeds typically require permits from regulatory agencies.

Santa Clara Valley Habitat Plan (SCVHP)

The Santa Clara Valley Habitat Plan (SCVHP) provides a framework for promoting the protection and recovery of natural resources, including endangered species, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. The SCVHP was developed through a partnership between Santa Clara County; the Cities of San José, Morgan Hill, and Gilroy; Santa Clara Valley Water District; Santa Clara Valley Transportation Authority; U.S. Fish and Wildlife Service; and California Department of Fish and Wildlife. The SCVHP will protect, enhance, and restore natural resources in specific areas of Santa Clara County and contribute to the recovery of endangered species. Rather than separately permitting and mitigating individual projects, the SCVHP evaluates natural-resource impacts and mitigation requirements comprehensively in a way that is more efficient and effective for at-risk species and their essential habitats. Conditions relevant to the Project include: Condition 11 of the HCP minimizes impacts on natural communities identified as representing important ecosystems in the Plan area; Condition 12 of the HCP Wetland and Pond Avoidance and Minimization minimizes direct and indirect impacts to wetlands and ponds; and Condition 15 of the HCP minimizes direct impacts of covered activities on western burrowing owls through the implementation of surveys, avoidance, and minimization guidelines. These conditions are discussed in detail in under criterion f) below.

3.4.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of many capital projects at the Facility, including projects affecting the same areas that would be affected by the Project. The Plant Master Plan EIR identified the following impacts on biological resources:

- No impact on interference with the movement of any applicable native or migratory fish or wildlife species resulting from the Plant Master Plan.
- Potentially significant, but mitigable to less-than-significant, impacts on special-status plant and wildlife species, riparian communities, wetlands, a local protected tree ordinance, and an adopted habitat conservation plan.

Issues	*New Potentially Significant Impact*	*New Less Than Significant Impact with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
IV. 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 state or federally protected wetlands (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?	☐	☐	☐	☒	☐

Discussion

a) **Special Status Plants**

The Plant Master Plan EIR identified significant impacts to Congden's tarplant, (*Centromadia parryi* ssp. *congdonii*), a California Rare Plant Rank (CRPR) 1B.2 plant. Impacts were due to future development in Plant Master Plan areas that are currently annual grassland and seasonal wetland habitat. The Plant Master Plan EIR concluded that implementation of mitigation to reduce impacts to tarplant would reduce impacts to less-than-significant levels. Congden's tarplant has been observed scattered throughout annual grassland in the vicinity of the Facility. While this species was not observed during the Headworks Improvements and New Headworks Alternatives Constraints Analysis reconnaissance survey and the Project's wetland delineation (ESA, 2019), and therefore is presumed to be absent from locations affected by the Headworks 3 and Emergency Basin construction activities, it may occur in the Soil Disposal Area (ESA, 2016; ESA, 2017). Soil placement activities in the Soil Disposal Area and associated hauling of soil from the Headworks 3 site to the Soil Disposal Area could affect Congdon's tarplant individuals. Implementation of Plant Master Plan EIR **Mitigation Measure BIO-1** (Reduce Impacts to Tarplant), listed below, would protect areas occupied by Condon's tarplant, reducing impacts to a less-than-significant level, same as those identified in the Plant Master Plan EIR. No additional mitigation is required. This mitigation measure includes an update to Mitigation Measure BIO-1 from the Plant Master Plan EIR to reflect the particular Project conditions; the adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR.

Mitigation Measure BIO-1: Reduce Impacts to Tarplant.

For purposes of reducing direct impacts to Congdon's tarplant, the project proponent shall:

- Conduct surveys for Congdon's tarplant May 1st through October 31st (inclusive) prior to implementing soil disposal or burrowing owl mitigation measures, including installation of artificial burrows; berm construction and mowing. This shall be conducted by a qualified biologist.
- Avoid damaging or removing individuals of Congdon's tarplant while conducting the above activities whenever possible.
- When mowing is necessary, conduct mowing in areas occupied by Congdon's tarplant (known natural and reseeded locations) before May 1st (inclusive; to avoid the blooming season [May to mid-November]) or after seeds have been set (mid-November). Do not mow in areas with Congdon's tarplant from May 1st (inclusive) to mid-November, even if those areas have burrowing owls or are part of the burrowing owl habitat management area. Mow no lower than 6 inches in areas with Congdon's tarplant in order to minimize removal of tarplant foliage prior to flowering.

Conditions in areas occupied by burrowing owl and Congdon's tarplant shall change over time, and conflicts between measures to reduce impacts to the tarplant

and burrowing owl habitat management strategies (e.g., mowing) may arise. In response to changing conditions, this measure may require refinement by a qualified biologist in coordination with CDFW to ensure adequate protection of both species. If individuals of Congdon's tarplant cannot be avoided through the provisions listed above, the permanent loss of Congdon's tarplants shall be mitigated at a minimum mitigation-to-impact ratio of 1:1. To address permanent loss of Congdon's tarplant individuals, the following measures shall be implemented:

- During October 1st through November 30th, inclusive, the project proponent shall track Congdon's tarplant within the area to determine when plants have set seeds. Once seeds have set, seeds from individuals of Congdon's tarplant from within the area shall be collected during October 1st through November 30th, inclusive, prior to initiation of activities that will impact individuals, and immediately sown at reseeding location(s) to allow the plant to flower and produce seed before the end of the next blooming period, thereby avoiding a temporal loss (i.e., the species missing a flowering cycle).
- Seed of Congdon's tarplant shall be applied either alone or as a component of the revegetation mix within the impact area for any temporary impacts and within a proposed replacement area for permanent impacts. The replacement area shall be determined in consultation with CDFW.
- Areas seeded with Congdon's tarplant shall be monitored during the first 5 years following reseeding. Monitoring shall be conducted during the peak blooming period (May 1st – November 30th, inclusive). The planted population shall be compared to a known reference population each time monitoring is conducted to accurately verify the degree of success of the planted population.
- During the first year of monitoring, revegetation shall be considered successful if the species in 70% of the reseeded area are occurring at densities comparable to the reference population. If unsuccessful, seed shall be collected and sown in the unsuccessful areas prior to the rainy season that year. If reseeding is necessary at any point during the monitoring period, the monitoring period shall reset (extended by five years) for the affected area.
- During each subsequent year of monitoring, revegetation will be considered successful if the species is found to be occurring in 80% of the reseeded area at densities comparable to the reference population. If revegetation is unsuccessful for two consecutive years, seed will be collected and sown in the unsuccessful areas prior to the rainy season that year.
- During the final two years of monitoring, if seeding of previously unoccupied habitat is successful (plants occur in 80% of the reseeded area at densities comparable to the reference population), then the mitigation will be deemed successful and no additional monitoring will be required. If unsuccessful, the area will be deemed unsuitable habitat. In this case, revegetation of additional areas, determined in consultation with CDFW will occur, and an additional two years of monitoring will be conducted.

For purposes of reducing indirect impacts on Congdon's tarplant, the project proponent shall:

- Modify weed control activities, in areas of occupied Congdon's tarplant habitat. Broadcast herbicides will not be used in or around areas supporting Congdon's tarplant. In areas supporting Congdon's tarplant, herbicides will only be applied through spot treatment. Herbicide applications will be conducted by persons familiar with Congdon's tarplant and able to identify the species to avoid it.
- Install informational and warning signs along trails in areas adjacent to habitat occupied by Congdon's tarplant instructing trail users to stay on the trail.

Special Status Birds, Raptors, and Migratory Birds

Raptors and common migratory birds have the potential to forage and nest in the non-native grasslands and trees within the Project site. Although no suitable habitat is provided for Ridgway's rail in the Project site, the nearest black rail occurrence was recorded approximately 1.5 miles west of the project in brackish marsh habitat of Alviso Slough, in August 2015 (CDFW, 2018). This species also inhabits seasonal wetland habitat, similar to that found in the project; however, there is a low potential for this species to occur due existing operation and maintenance activities within the current Facility.

The Plant Master Plan EIR identified impacts to nesting resident and migratory birds that could utilize vegetation in or near the Project site. These impacts include temporary disturbance during construction, effects of vegetation removal on nesting habitat, and effects of fugitive light from proposed development south of the Facility. Similar construction activities as those described in the Plant Master Plan EIR would occur under the Project, especially activities that involve ground disturbance and the use of heavy machinery for pipeline installation, building construction, excavation/grading and stockpiling activities. These activities may affect nesting birds in the vicinity of the Project site.

The Plant Master Plan EIR identified pre-construction survey requirements and CDFW protocols to protect nesting activity, if any were to occur at the time Project construction begins. Implementation of Plant Master Plan EIR **Mitigation Measure BIO-2d** (Raptor and Migratory Bird Nest Measures), listed below, would reduce potential impacts to nesting birds to a less than significant level and no additional mitigation would be necessary. This mitigation measure includes an update to Mitigation Measure BIO-2d from the Plant Master Plan EIR to reflect the most recent occurrence information for rails; the adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR. As a result, impacts to nesting resident, migratory, or special-status birds are considered the same as the those identified in the Plant Master Plan EIR and no additional mitigation is required.

Mitigation Measure BIO-2d: Raptor and Migratory Bird Nest Measures.

If possible, construction shall be scheduled between September 1st and January 31st (inclusive) to avoid the nesting season. If Project construction is scheduled during breeding bird season (February 1st–August 31st, inclusive), City's Environmental Services Department (ESD) or its contractor shall retain a qualified wildlife biologist to conduct a survey for nesting raptors and migratory bird nests within 7 days of the start of construction or after any construction breaks of 14 days or more, within 7 days prior to the resumption of construction. Surveys shall be performed for the Project area and for suitable habitat within 300 feet. If an active nest is discovered, a no-disturbance buffer zone around the nest tree (or, for ground-nesting species, or nests identified on Facility buildings, the nest itself) shall be established. The no-disturbance zone shall be marked with flagging or fencing that is easily identified and avoided by the construction crew, and shall not affect the nesting birds. In general, the minimum buffer zone widths shall be as follows: 100 feet (radius) for non-raptor species and 300 feet (radius) for raptor species; however, the buffer zone widths may be adjusted if an obstruction, such as a building, is within line-of-sight between the nest and construction. Buffer zone widths and other avoidance measures may be modified based on consultation with CDFW and the USFWS. Buffer zones shall remain in place as long as the nest is active or young remain in the area and are dependent on the nest.

If California black rails are detected during surveys, the City's ESD or Planning, Building and Code Enforcement (PBCE) Senior Environmental Planner shall consult USFWS staff to identify the appropriate avoidance measures prior to start of construction. The project proponent shall be responsible to ensure that USFWS and/or CDFW protocols and requirements are implemented prior to the start of construction.

Construction activities that are scheduled to begin outside the breeding season (September 1st through January 31st, inclusive) can proceed without surveys. If possible, all necessary tree and vegetation removal shall be conducted before the start of breeding bird season to minimize the opportunity for birds to nest at the Project site and conflict with Project construction activities.

ESD shall notify the PBCE Senior Environmental Planner when the mitigation actions will occur for approval prior to the start of construction.

Most elements of operation of the Project would not adversely affect raptors or migratory birds, or special-status wildlife species, given the noise and disturbance caused by existing operation and maintenance activities at the Facility, and design aspects of proposed facilities. However, the addition of lighting associated with the construction and operation of new facilities may result in adverse effects on breeding birds. The loss of any active nest or disruption of nesting efforts would be considered a potentially significant impact. Implementation of **Mitigation Measure BIO-3** (Minimize Light Pollution), listed below, would ensure that potential impacts are mitigated to a less-than-significant level.

Mitigation Measure BIO-3: Minimize Light Pollution.

Lights at the Project site (during construction and operation) shall be directed downward and shielded pursuant to Condition 7 of the Santa Clara Valley Habitat Conservation Plan (HCP)to ensure that no fugitive light spills out into natural lands and interferes with typical avian behavior. ESD and/or Public Works qualified personnel shall inspect lighting plans and/or specifications. ESD shall notify PBCE Senior Environmental Planner when the mitigation actions will occur for approval prior to the start of construction.

Western Burrowing Owl

The Plant Master Plan EIR reported that western burrowing owls were known to occur within grasslands to the south and west of the operational area and within the Emergency Basin. The Plant Master Plan concluded that construction of Facility improvements near western burrowing owl nesting areas could result in significant impacts, which would be reduced to less-than-significant with mitigation. The Plant Master Plan EIR also concluded that development in the areas south of the Facility would result in loss of western burrowing owl habitat, and that fugitive light from proposed development south of the Facility would affect normal avian behavior.

Since certification of the Plant Master Plan EIR, additional observations of nesting western burrowing owls, a CDFW Species of Special Concern and USFWS Bird of Conservation Concern, in and adjacent to the non-native grassland habitats of the Headworks 3 site have been made (ESA, 2015).

Temporary noise, visual, and vibration impacts to potential nesting western burrowing owls between February 1 and August 31 (breeding season) within and adjacent to the Headworks 3 site could occur as a result of Project-related construction activities. Temporary loss of western burrowing owl nesting habitat during construction could also occur due to the Project. These impacts are expected to occur at the Emergency Basin, Emergency Basin Overflow Structure (EBOS), Headworks 3, and the soil disposal area proposed construction locations as a result of grading, excavation, and stockpiling of dirt. These would be considered significant impacts as they may result in adverse effects on foraging or breeding western burrowing owls in or adjacent to the Project footprint. Stockpiling of dirt in the soil disposal area would be considered a temporary impact as the quality of potential western burrowing owl nesting habitat would not appreciably change after Project implementation. The excavated soil from the Project footprint placed in the soil disposal area would be non-hazardous; placed in a manner that conforms to existing contours; and habitable for ground squirrel colonies that often provide a source of burrows.

Permanent impacts to western burrowing owl nesting habitat would occur through the loss of non-native grasslands associated with the rehabilitation of the Emergency Basin and Headworks 3 facilities and paved area (refer to Figure 3.4-1). Permanent loss of grassland habitat would result from a portion of the excavation and re-compaction of approximately 30 percent of the Emergency Basin walls and floor, followed by

installation of a 12-inch thick concrete liner on top of the entire existing basin up to the crest of the basin walls. Most of the Headworks 3 site footprint would be paved. Up to 10.6 acres of burrowing owl habitat would be permanently altered by the Project. As described in Section 2.5 of the Project Description, the operation and maintenance of the new Headworks would be the same as the current Headworks facilities operations and would fall within current Facility procedures, but would occur at the Headworks 3 site. These activities would also result in significant impacts on western burrowing owl nesting habitat.

Temporary and permanent impacts to nesting western burrowing owls would be similar to impacts identified in the Plant Master Plan EIR because similar temporary construction activities and permanent development would occur within western burrowing owl nesting habitat. The Project would be subject to protection measures under the Santa Clara Valley Habitat Conservation Plan (Habitat Plan or HCP), which was adopted in 2013.[21] The Habitat Plan's Burrowing Owl Conservation Strategy would be implemented as a result of construction activities associated with Headworks 3, the Emergency Basin, and EBOS. **Mitigation Measure BIO-2e** (Western Burrowing Owl Measures) provided under the approved Plant Master Plan EIR for loss of nesting and foraging habitat would also be used under the Project. This mitigation measure includes an update to Mitigation Measure BIO-2e from the Plant Master Plan EIR to reflect the Project-specific requirements; the adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR. Therefore, operation-related impacts are not expected to significantly adversely affect western burrowing owls.

Mitigation Measure BIO-2e: Western Burrowing Owl Measures.

To avoid or minimize direct impacts of Project activities on western burrowing owls, the City shall ensure the following procedures are implemented consistent with the HCP. This survey methodology is consistent with accepted survey protocols for this species.

1. Habitat Survey

a) Western burrowing owl habitat surveys shall be required in the Project area in all HCP modeled occupied habitat. Surveys are not required in sites that are mapped as potential burrowing owl nesting or only overwintering habitat. Modeled habitat types may change throughout the permit term based on the best available scientific data. Habitat surveys are required in both breeding and non-breeding seasons.

b) Qualified biologist(s) shall conduct a pedestrian survey of the Project area and accessible areas within 250-feet of the Project area. Pedestrian survey transects shall be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines shall be no more than 50 feet and can be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Poor weather may affect

[21] The HCP Implementing Agreement was signed by parties in 2013.

the biologist's ability to detect burrowing owls; therefore, the biologist shall avoid conducting surveys when wind speed is greater than 20 kilometers per hour and there is precipitation or dense fog. The biologist shall map areas with burrows or burrow complexes that could support burrowing owls and all burrows that may be occupied (as indicated by tracks, feathers, egg shell fragments, pellets, prey remains, or excrement).

c) To avoid impacts to owls from surveyors, owls and/or occupied burrows shall be avoided by a minimum of 150 feet wherever practical to avoid flushing occupied burrows. Disturbance to occupied burrows shall be avoided during all seasons.

d) If suitable habitat is identified during the habitat survey, and if the Project does not fully avoid impacts to the suitable habitat, preconstruction surveys shall be required. Suitable habitat is fully avoided if the project footprint does not impinge on a 250-foot buffer around the suitable burrow.

2. Preconstruction Surveys

a) A qualified biologist shall conduct preconstruction surveys in all suitable habitat identified in the habitat surveys within 250 feet of construction activity, between 14 and 4 days prior to initiating ground disturbance related to Project construction activities. The 250-foot buffer zone shall be surveyed to identify burrows and owls outside of the Project area which may be impacted by factors such as noise and vibration (heavy equipment) during project construction. As burrowing owls may recolonize a site after only a few days, time lapses between Project activities shall require subsequent take avoidance surveys including but not limited to a final survey conducted no more than 2 days prior to ground disturbance to ensure absence. A minimum of two surveys shall be conducted (if owls are detected on the first survey, a second survey is not needed).

b) The preconstruction survey shall be a minimum of 3 hours, beginning 1 hour before sunrise and continuing until 2 hours after sunrise (3 hours total) or beginning 2 hours before sunset and continuing until 1 hour after sunset. Additional time may be required for large project sites.

3. Avoidance Measures

The City shall employ avoidance measures described below to avoid direct take of individual burrowing owls during Project construction.

Breeding Season Avoidance Measures - February 1 to August 31

a) If preconstruction surveys identify evidence of Western burrowing owls within 250 feet of the Project area during the breeding season, the Project proponent shall avoid all nest sites that could be disturbed by Project construction activities during the remainder of the breeding season or while the nest is occupied by adults or young (occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance shall include establishment of a 250-foot no-disturbance buffer zone around active nest sites by a qualified biologist.

b) If active nests cannot be avoided, construction may occur within 250 feet of active nest sites if 1) the nest is not disturbed, and 2) the Project proponent develops and implements an Avoidance, Minimization, and

Monitoring Plan, subject to approval by CDFW the Habitat Agency overseeing the HCP. The plan shall incorporate the following criteria:

i. A qualified biologist shall monitor the owls for at least 3 days prior to Project construction to determine baseline nesting and foraging behavior (i.e., behavior without construction). The same qualified biologist shall monitor the owls during construction and find no change in owl nesting and foraging behavior in response to construction activities.

ii. If there is any change in owl nesting and foraging behavior as a result of Project construction activities, these activities shall cease within the 250-foot buffer. Construction shall not resume within the 250-foot buffer until the adult owls and juveniles from the occupied burrows have moved out of the project site.

iii. If monitoring indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use by owls, the no-disturbance buffer zone may be removed. The biologist shall excavate the burrow to prevent reoccupation after receiving approval from CDFW.

Non-Breeding Season Avoidance Measures – September 1st to January 31st, (inclusive)

a) If preconstruction surveys identify evidence of Western burrowing owls within 250 feet of the Project area during the non-breeding season (September 1st to January 31st, inclusive), the Project proponent shall establish a 250-foot no-disturbance buffer around occupied overwintering burrows as determined by a qualified biologist.

b) If occupied burrows cannot be avoided, construction may occur within 250 feet of overwintering burrows sites if:

i. A qualified biologist monitors the owls for at least 3 days prior to construction to determine baseline foraging behavior (i.e., behavior without construction).

ii. The same qualified biologist monitors the owls during construction and finds no change in owl foraging behavior in response to construction activities.

iii. If there is any change in owl nesting and foraging behavior as a result of construction activities, these activities shall cease within the 250-foot buffer.

iv. If the owls are gone for at least one week, the Project proponent may request approval from the HCP Habitat Agency for qualified biologist to excavate usable burrows to prevent owls from re-occupying the site. After all usable burrows are excavated, the no-disturbance buffer zone shall be removed and construction may continue. Monitoring must continue as described above for the non-breeding season as long as the burrow remains active.

4. Construction Monitoring and Environmental Training

During construction, the no-disturbance buffer zones shall be established and maintained where applicable and based on the Project Avoidance, Minimization,

and Monitoring Plan. A qualified biologist shall monitor the site consistent with the requirements described in the Avoidance Measures, described above, to ensure that buffers are enforced and owls are not disturbed. The qualified biological monitor shall prepare and perform an environmental training for all Project personnel on the avoidance procedures, buffer zones, and protocols in the event that a burrowing owl flies into an active construction zone.

5. Passive Relocation

If avoidance measures described cannot be implemented with the Project, Passive Relocation shall be implemented according to the protocol described in the HCP and in coordination with, and approval by CDFW.

Under the Project, temporary and permanent impacts to any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS are the same as those identified in the certified Plant Master Plan EIR; therefore, there is no change in impact. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

b) As discussed in the Setting, no riparian habitat is present in the Project area; therefore, the Project would not substantially affect any riparian habitat, and would not affect other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS. The Project would temporarily impact a potentially jurisdictional seasonal wetland, as discussed in item c) below. This impact would be less than that identified in the Plant Master Plan EIR, and would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Less Impact than Approved Project. (No Impact)**

c) The Plant Master Plan EIR identified impacts on wetland resources throughout the Plant Master Plan area, including in the southwest portion of the Plant Master Plan area. The Project has moved to a different location than was proposed in the Plant Master Plan, and includes construction activity in an area of the Plant Master Plan area where disturbance was not previously proposed. As described in Section 3.4.1, wetland delineation surveys have been conducted for areas included in the Project. Potentially jurisdictional wetlands occur in areas that would be temporarily disturbed during construction.

Pipelines would be constructed through a portion of the drainage feature west of Mike Tocce Lane Roadway Bridge, shown on Figure 3.4-2. Temporary direct impacts to wetlands as a result of removal or fill would occur due to excavation for this pipeline. Indirect temporary impacts could occur through the introduction and spread of non-native species due to ground disturbance and transport from construction personnel and equipment, in addition to the degradation or modification of habitat through increased erosion and sedimentation, and changes to hydrologic regimes. These short-term construction-related impacts as a result of the Project would be considered significant.

However, with the implementation of updated versions of Plant Master Plan EIR **Mitigation Measure BIO-4a**, **Wetlands Avoidance Measures**, to reduce potential sedimentation or contamination of stormwater runoff generated from the Project site into

potential jurisdictional wetlands, and **Mitigation Measure BIO-4b**, **Regulatory Approval and Wetlands Restoration**, which would require the Project to obtain regulatory agency permits and approvals to ensure the Project results in no net loss of wetland habitat functions and values, impacts to potentially jurisdictional features would be considered less than significant. These mitigation measures include updates to Mitigation Measures BIO-4a and BIO-4b from the Plant Master Plan EIR to reflect the Project specific requirements; the adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR.

No permanent impacts to wetland features are anticipated under the Project. The drainage channel would be restored to existing grade once the 96-inch pipeline is installed. No other wetland features would be filled by either the Headworks 3 facilities, the Emergency Basin lining, or use of the Soil Disposal Area. After Project implementation, potential herbicide use by the Facility to control weeds would continue to occur in upland areas, with no increased threat to potential jurisdictional features when compared to existing operations.

Mitigation Measure BIO-4a: Wetlands Avoidance Measures.

Access roads, work areas, and infrastructure shall be sited to avoid and minimize direct and indirect impacts to jurisdictional features. Prior to the beginning of any construction-related activities, the following measures shall be applied to protect potential jurisdictional features:

a. A protective barrier (such as silt fencing) shall be erected around water features adjacent to the Project at the “top of bank" or at the feature boundary to isolate them from Project activities and reduce the potential for incidental fill, erosion, or other disturbance;

b. Signage shall be installed on the fencing to identify sensitive habitat areas and restrict construction activities;

c. No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity shall occur at the Project site until a representative of the City has inspected and approved the protection fencing; and

d. The City shall ensure that the temporary fencing is continuously maintained until the Project is completed.

e. Drainage from all proposed facilities where chemical spills could occur during Project operation shall be directed away from sensitive resources and/or include other measures to minimize potential for release of potential pollutants to the environment.

Mitigation Measure BIO-4b: Regulatory Approval and Wetlands Restoration.

If it is determined during the design phase that impacts on wetland habitat cannot be avoided, the City’s Environmental Team (ET) shall obtain permits and approvals from USACE, RWQCB, and/or CDFW, as applicable. In order to ensure that the Project results in no net loss of wetland habitat functions and values, the City shall compensate for the loss of wetland resources through on-site

restoration/creation, off-site protection and enhancement of wetland habitat, and/or purchase of mitigation credits consistent with the terms and conditions of permits and approvals from the resource agencies (USACE, RWQCB, and CDFW, as applicable). On-site or-off-site habitat restoration/creation and/or purchase of mitigation credits consistent with the terms and conditions of the resource agency permits shall be determined in consultation with the resource agencies, as applicable. The City shall prepare a mitigation plan, which shall include monitoring applicable requirements and success criteria.

With implementation of these measures, impacts on potential jurisdictional features by the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

d) The Plant Master Plan concluded that Facility improvements would not interfere with migratory corridors or impede the use of nursery sites because no wildlife corridors or nursery sites are present within or adjacent to the proposed operational area. An example of this type of impact identified by the Plant Master Plan EIR was the determination that other proposed land uses in the Plant Master Plan area, in particular the arterial roadway and salt pond restoration in Pond A18, could impede the use of Central California coast steelhead and Central Valley/Sacramento River Chinook salmon, which use Coyote Creek as a migratory connection to spawning habitat. While the Project has moved to a different location than was proposed in the Plant Master Plan, it would be within the Plant Master Plan area and would not affect the Coyote Creek migration corridor. The Project would not interfere substantially with the movement of any native resident or migratory fish or wildlife corridors, or impede the use of native wildlife nursery sites due to the Project's small impact area relative to the contiguous wildlife corridors in the region. As such, this impact would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant Impact)**

e) The Project would not remove any trees. Project construction would occur adjacent to trees along the drainage channel. The Plant Master Plan EIR concluded that the Plant Master Plan could result in the loss of or damage to existing trees around the operational area and in the southern Plant Master Plan area; however, with the implementation of mitigation measures to compensate for tree removal and minimize effects of construction activities on trees to remain, impacts would be less-than-significant. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would still be located within the Plant Master Plan area. Although the Project would not remove any trees, construction activity associated with the 36-inch pipeline connecting EBOS to the Milpitas Force Main could adversely affect trees to remain in this area. Protected trees adjacent to the Project site along the 36-inch pipeline connecting EBOS to the Milpitas Force Main shall be safeguarded from construction activities by conditions through implementation of the Plant Master Plan EIR **Mitigation Measure BIO-5b: Minimize Construction Effects on Protected Trees to be Retained**, listed below. Measures include no construction equipment within the dripline of any trees and the use

of barricades around tree trunks to prevent injury to trees. With implementation of the measures listed below, the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR.

Mitigation Measure BIO-5b: Minimize Construction Effects on Protected Trees to be Retained.

The project proponent shall implement the following tree-protection measures prior to and during project construction.

- Retain a certified arborist to oversee protection of native trees to be retained on the project site.
- Require that any tree or root pruning occurring for construction is first approved by the certified arborist.
- Require that the certified arborist evaluate injuries to retained trees as soon as possible for appropriate treatment.

With implementation of these conditions and measures, the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant Impact with Mitigation)**

f) Portions of the Project would be constructed within the Santa Clara Valley Habitat Conservation Plan area, and therefore the Project is subject to the Habitat Plan (effective October 14, 2013). The Plant Master Plan EIR concluded that Facility improvements would not conflict with the Habitat Plan because all improvements would occur outside the Habitat Plan area. The Plant Master Plan EIR concluded that other land uses, such as development of areas south of the paved operational area, also would not conflict with the Habitat Plan because the types of facilities contemplated in the Plant Master Plan are similar to urban activities that are covered by the Habitat Plan, and because the western burrowing owl mitigation measure in the Plant Master Plan EIR was consistent with the management objectives and success thresholds defined in the Habitat Plan.

Much of the Project would be constructed within the Habitat Plan area, as shown on Figure 3.4-1 (the Habitat Plan northern boundary coincides with the western burrowing owl habitat shown on Figure 3.4-1). While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and the proposed land uses are similar to urban activities that are covered by the Habitat Plan.

Condition 11 of the Habitat Plan applies to all covered activities that may impact streams. This includes all development inside the urban service area where a stream or the stream setback overlaps any portion of the parcel on which a covered activity is being implemented. The drainage channel, located just outside the northern boundary of the Habitat Plan boundary, in the Project Site is not mapped in the Habitat Plan, and therefore is not a Category 1 stream. According to the Habitat Plan, ESA biologists

evaluated the stream to determine if it qualifies as a Category 2 stream.[22] Based on the Project's preliminary wetland delineation (ESA, 2019), which identified the surface connection of the drainage channel to its tidal reach and San Francisco Bay as being blocked by earthen barriers, the biologists have determined that the feature does not qualify as a Category 2 Stream. Condition 11, Stream and Riparian Setbacks of the Habitat Plan, only applies to Category 1 and 2 streams; thus, no riparian setback is needed in this case. Even if the drainage channel is considered a Category 2 stream, the Project would be exempt from implementing a development setback due to the feature not meeting all three of the hydrologic connectivity, channel form, and topographic position criteria that defines a watercourse discussed starting on page 6-48 ("Criteria to Verify or Identify a Watercourse as a Stream") of the Habitat Plan.[23]

Further, through the implementation of the Plant Master Plan EIR Mitigation Measure BIO-4a: Wetlands Avoidance Measures and Mitigation Measure BIO-4b: Wetlands Restoration for Project-Level Improvements, as described above, the Project would be compliant with Condition 12, Wetland and Pond Avoidance and Minimization identified in the HCP relative to wetland community resources within the study area. The avoidance and minimization measures associated with this condition would require the following: fencing would be erected between the project area and the wetlands; erosion control measures would be used on site to reduce siltation and runoff of contaminants into wetlands; and regulatory agency permits and approvals would be obtained to ensure the Project results in no net loss of the wetland community function.

The Headworks 3 site, the Emergency Basin, and the Soil Disposal Area are within the Burrowing Owl Fee Zone and Burrowing Owl Wildlife Survey Area. Activities at the Headworks 3 site and associated with the 96-inch pipeline crossing of the existing drainage channel would occur within the Habitat Plan burrowing owl fee zone area west of the EBOS and north of the Emergency Basin. Additionally, the new 36-inch force main on the east side of Mike Tocce Lane Roadway Bridge would encroach into the Habitat Plan burrowing owl fee zone area north of the EBOS. Soil disposal and lining of the Emergency Basin would also occur in the burrowing owl fee zone. The Project would be consistent with Condition 15 of the HCP, through implementation of Plant Master Plan EIR **Mitigation Measure BIO-2e: Western Burrowing Owl Measures**, as described above. Mitigation Measure BIO-2e incorporates surveys, and avoidance and minimization measure guidelines to avoid or minimize direct impacts on western burrowing owls, and would ensure burrowing owl habitat supports a stable or increasing burrowing owl population.

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22 Santa Clara Valley Habitat Agency, *Santa Clara Valley Habitat Plan Clarification and Interpretation, Condition 11 Stream and Riparian Setback: Clarification on determining whether a watercourse is a stream under the Habitat Plan,* Number 2014-002, June 24, 2015.

23 For additional information regarding these criteria, refer to *Santa Clara Valley Habitat Plan, Chapter 6 Conditions on Covered Activities and Application Process*, August 2012, page 6-48, and *Santa Clara Valley Habitat Plan Clarification and Interpretation, Condition 11 Stream and Riparian Setback: Clarification on determining whether a watercourse is a stream under the Habitat Plan*, Number 2014-002, June 24, 2015.

The Project would not construct facilities or otherwise alter any other Habitat Plan survey areas, fee zones, or habitat plan condition areas (Santa Clara Valley Habitat Agency, 2019). With implementation of the above measures, the Project would not conflict with Habitat Plan conditions relating to jurisdictional features and burrowing owls. As such, the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

References

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U.S. Geological Survey, 2018. Milpitas Quadrangle, California, 7.5-minute series.

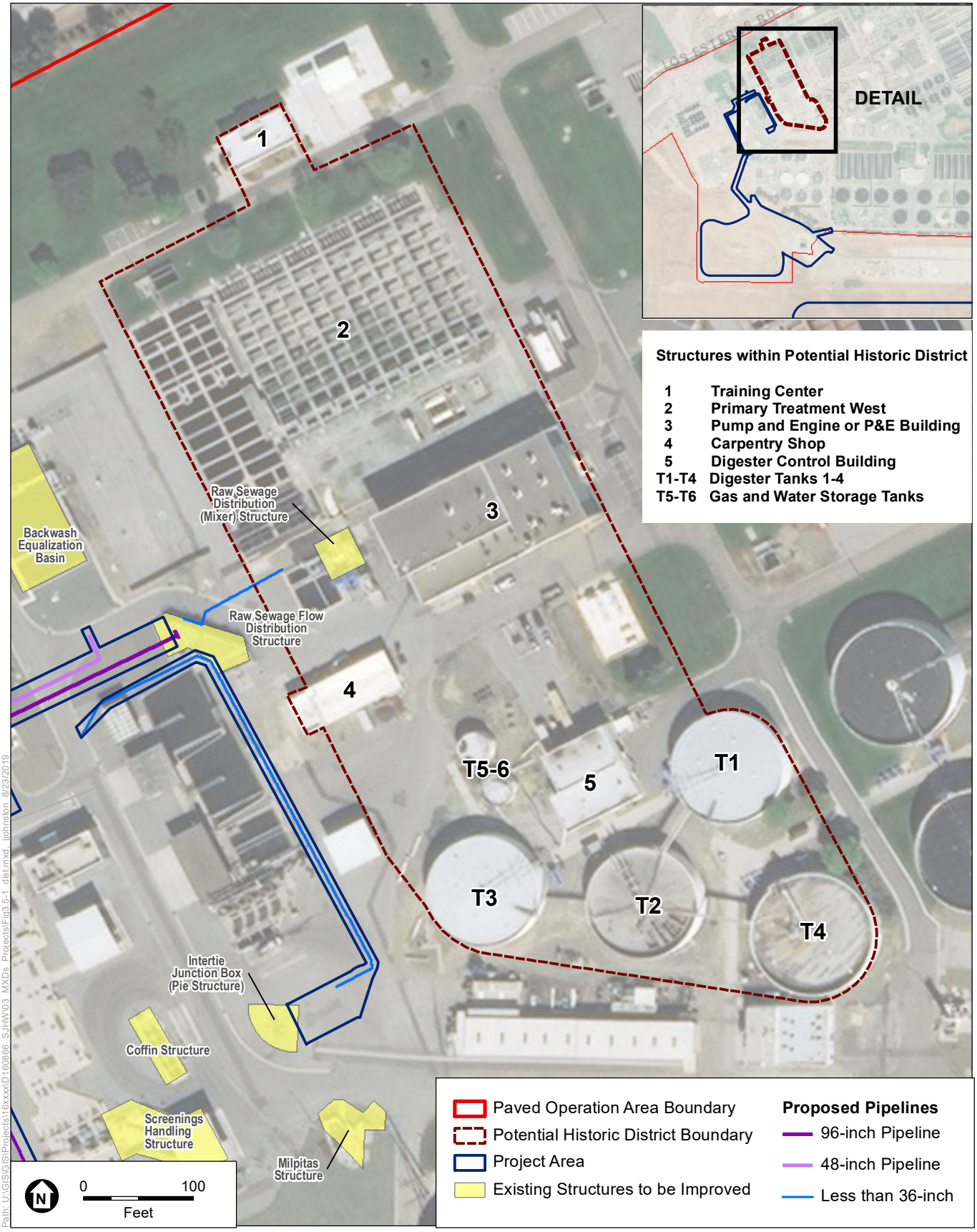
3.5 Cultural Resources

3.5.1 Setting

The cultural resources conditions relevant to the Project site have changed since the adoption of the Plant Master Plan EIR. Since that time, the City has inventoried and evaluated structures in the older, northern portion of the Regional Wastewater Facility (Facility) for historical significance. In addition, several archaeological studies, including two subsurface investigations, have been completed to further determine the archaeological sensitivity of the Facility. Regulations related to cultural resources have also changed. This includes the adoption of Assembly Bill 52 (AB 52), regarding tribal cultural resources (refer to Section 3.18 of this document for a discussion of tribal cultural resources).

The *San José-Santa Clara Regional Wastewater Facility Streamline Moderne Industrial Historic District* (District), as shown in **Figure 3.5-1**, has been recommended eligible for listing in the National Register of Historic Places (National Register) under Criteria A and C at the local level, and eligible for listing in the California Register of Historical Resources (California Register) under Criteria 1 and 3. The District encompasses approximately seven acres on the north-central portion of the Facility and includes 11 contributing buildings and structures that were built between 1956 and circa 1963, including the Pump and Engine Building described in the Plant Master Plan EIR. The District retains sufficient historic integrity to convey its significance. The District, including the Carpentry Shop and Digester Tank 3, is approximately 1,000 feet north of the proposed Headworks 3 Project site; however, the Project includes improvements to the Raw Sewage Distribution (Mixer) Structure, which is within the boundary of the Historic District, and installation of a pipeline into the historic district boundary.

Since completion of the Plant Master Plan EIR two archaeological subsurface surveys have been completed in the Facility. The subsurface surveys consisted of excavating shovel test pits (STPs) and auger samples, including twelve STPs within the Construction Enabling project area (Construction Enabling Area shown on Figure 2-1). The purpose of the subsurface survey was to determine whether buried or otherwise obscured archaeological resources exist in the Facility. The subsurface survey did not identify any cultural materials in the vicinity of the Project (ESA, 2015a; ESA, 2015b). Therefore, there is a low possibility of encountering intact buried cultural materials in the area.



San José Headworks Improvements and New Headworks

Figure 3.5-1
San José-Santa Clara Regional Wastewater Facility
Potential Streamline Moderne Industrial Historic District

ESA

3.5.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts on cultural resources:[24]

- Potentially significant, but mitigable to less-than-significant, impacts on historical resources, cultural landscapes, unknown archaeological resources, and disturbance to human remains. Impacts on historical resources would result from alterations to the Pump and Engine Building. Impacts on a cultural landscape were associated with restoration of former salt pond A18. Impacts on unknown archeological resources were associated with excavation for all components of the Plant Master Plan, particularly in areas to the south and east of the operational area. Impacts on human remains were associated with excavation for all components of the Plant Master Plan. These impacts were reduced to less than significant with implementation of mitigation measures providing protocol to follow in the event of inadvertent discovery of archaeological resources or inadvertent discovery of human remains.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
V. CULTURAL RESOURCES — Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒	☐

Discussion

a) CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register, or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on architectural and structural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed under impact b, below. The Plant Master Plan EIR evaluated impacts on historical resources and concluded that decommissioning of the Pump and Engine Building would be a potentially significant impact, but could be reduced by complying with historic resource evaluation procedures prior to decommissioning. The Plant Master Plan EIR also

[24] Plant Master Plan impacts on paleontological resources are summarized in Section 3.7, Geology and Soils, of this document, and impacts of the Project on paleontological resources are evaluated in Section 3.7.

concluded that restoration of Pond A18 would result in significant impacts to an historic cultural landscape.

As discussed in the Setting, the *San José-Santa Clara Regional Wastewater Facility Streamline Moderne Industrial Historic District* is approximately 1,000 feet north of the Headworks 3 site and just east of the proposed pipelines within the paved operational area. While improvements would be made to the Raw Sewage Distribution (Mixer) Structure, there would be no direct or indirect impacts to the 11 buildings and structures that contribute to the District, including to the Pump and Engine Building described in the Plant Master Plan EIR, because none of the buildings and structures would be demolished or otherwise altered by the Project (ESA, 2016). Improvements to the Raw Sewage Distribution (Mixer) Structure would be below-ground. No impacts would occur to built-environment historical resources as a result of the Project and no mitigation is required.

Although the *San José-Santa Clara Regional Wastewater Facility Streamline Moderne Industrial Historic District* has been recorded and evaluated as eligible for listing in the California and National Register, implementation of the Project would not result in any significant impacts to the District because none of the buildings and structures would be demolished or otherwise altered by the Project. There would be no additional impacts to historical resources beyond those identified in the previously approved Plant Master Plan EIR. **Less Impact as Previously Approved Project. (Less than Significant Impact)**

b) This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in PRC Section 21083.2(g). A significant impact would occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource. The Plant Master Plan EIR evaluated impacts of Plant Master Plan activities on archeological resources, and concluded that excavation associated with the Plant Master Plan in areas south and east of the operational area, as well as deeper excavations within the operational area, could result in the accidental discovery of archeological resources.

ESA completed a records search for the Project at the Northwest Information Center (NWIC) of the California Historical Resources Information System on August 1, 2011 (File No. 11-0118) and updated the search on May 11, 2016 (File No. 15-1655). There are no previously recorded prehistoric or historic-era archaeological resources in the Project site. Background research indicates that prehistoric archaeological resources have been recorded within a one-mile radius of the Project; including archaeological site CA-SCL-528. This prehistoric resource consists of midden soil with bay and marine shell, fire-cracked rock, carbon and baked clay, faunal fragments, lithic debitage, and groundstone fragments. Human remains have also been uncovered at this location. Subsurface excavations have been completed in 1983, 2008, 2010, and 2015 to define site boundaries.

ESA conducted a subsurface survey in the Construction Enabling project area on July 21, 2015 and completed a surface survey of the Project site at that time. The subsurface survey consisted of excavating 12 STPs (0.5 meters below ground surface) to determine whether there are subsurface or obscured archaeological resources (ESA, 2015b). No archaeological resources were identified during the surface and subsurface surveys. Based on the results of the previous and current investigations, there is a low potential to impact archaeological resources during Project implementation.

While unlikely, the unanticipated discovery of archaeological materials cannot be entirely discounted and this would be a significant impact, same as the impact resulting from excavation proposed for other locations in the Plant Master Plan EIR. To facilitate compliance with CEQA, Project personnel shall be alerted to the possibility of encountering archaeological materials during construction, and informed of the proper procedures to follow in the event that such materials are found. In the event of an inadvertent discovery of subsurface archaeological materials during ground disturbing activities, implementation of **Mitigation Measure CUL-3a**, as included below, would reduce this impact. This mitigation measure includes an update to Mitigation Measure CUL-3a from the Plant Master Plan EIR to include a "preservation in place" clause, per a court case ruling (Madera Oversight Coalition Inc., et al., vs. County of Madera, September 2011). The adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR.

Mitigation Measure CUL-3a: Inadvertent Discovery of Archaeological Resources.

If prehistoric or historic-era archaeological resources are encountered by construction personnel during Project implementation, all construction activities within 100 feet shall halt and the contractor shall notify ESD personnel and the PBCE Senior Environmental Planner. 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; stone milling equipment (e.g., mortars, pestles, hand stones, or milling slabs); and battered stone tools, such as hammer stones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

The City's ESD or its contractor shall retain a Secretary of the Interior-qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical resource as defined by CEQA (CEQA Guidelines §15064.5), construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the PBCE Senior Environmental Planner, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric, who would be identified by the Native American Heritage Commission [NAHC]). If the Native American representative identifies the find as a tribal resource, ESD or its contractor shall proceed to **Mitigation Measure CUL-3c**. For archaeological resources, the archaeologist, in consultation with the PBCE Senior Environmental

Planner and the City's Historic Preservation Officer, shall determine when construction can resume.

The preferred mitigation shall be preservation in place. If preservation in place is not physically or financially feasible, mitigation shall be data recovery through excavation. If preservation in place is selected as mitigation, the mitigation shall be accomplished through one of the four following means: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource before building appropriate facilities on the resource site; or (4) deeding the resource site into a permanent conservation easement. If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to the satisfaction of the PBCE Senior Environmental Planner to recover the scientifically consequential information from the resource prior to any excavation at the resource site. Treatment for most of the resources that could be encountered shall consist of (but shall not necessarily be 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.

Mitigation Measure CUL-3c: Inadvertent Discovery of Tribal Cultural Resources.

The Native American representative shall make recommendations to the City for the appropriate measures to treat the tribal cultural resource which will be implemented in accordance with Section 15064.5 of the CEQA Guidelines.

Section 3.18 includes a detailed discussion of tribal cultural resources.

With implementation of these measures, impacts on archaeological resources by the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

c) The Plant Master Plan EIR evaluated impacts related to disturbing human remains, and concluded that any Facility improvement or other proposed Plant Master Plan activity that involves ground disturbance could have a significant impact related to disturbing human remains. Based on the background research as well as surface and subsurface surveys, the potential to discover human remains during ground disturbance is low in the Project site. However, the discovery of human remains cannot be entirely discounted and this would be a significant impact. To facilitate legal compliance, Project personnel shall be alerted to the possibility of encountering human remains during construction, and informed of the proper procedures to follow in the event they are found. Implementation of Plant Master Plan EIR **Mitigation Measure CUL-5**, as included below, would reduce this impact.

Mitigation Measure CUL-5: Inadvertent Discovery of Human Remains.

If human remains are encountered by construction personnel during project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the PBCE Senior Environmental Planner. ESD shall contact the Santa Clara County Coroner to determine whether or not the remains are Native American origin or whether an investigation into the cause of death is required. If the remains are determined to be Native American, the Coroner shall contact the NAHC within 24 hours. The NAHC would 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 for the appropriate means of treating the human remains and any associated funerary objects which shall be implemented in accordance with Section 15064.5(e) of the CEQA Guidelines.

With implementation of the above measure, impacts on human remains would be less than significant. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

References

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ESA, 2015a. *San José-Santa Clara Regional Wastewater Facility Zanker Road Development Project Cultural Resources Survey Report*, Prepared for the City of San José, June 2015.

ESA, 2015b. Cultural Resources Survey Report, San José-Santa Clara Regional Wastewater Facility Construction Enabling Project, Prepared for the City of San José, July 2015.

ESA, 2016. Cultural Resources Survey Report (Combined Archaeological Survey Report and Historic Resources Evaluation Report), San José-Santa Clara Regional Wastewater Facility Capital Improvement Program, Prepared for the City of San José, December 2016.

3.6 Energy

3.6.1 Setting

This section describes existing energy use and systems at the proposed Headworks Improvements and New Headworks Project (Project) at the San José-Santa Clara Regional Wastewater Facility (Facility) in the City of San José and evaluates the impacts of construction and operation of the Project on energy resources and infrastructure, and the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.), including impacts associated with onsite renewable energy development.

The energy setting as relevant to the Project, including applicable regulations, has not appreciably changed since the certification of the Plant Master Plan EIR. Energy conservation is embodied in many federal, state and local statutes and policies. At the federal level, energy standards apply to numerous products (e.g., the EnergyStar™ program) and transportation (e.g., fuel efficiency standards). At the state level, Title 24 of the California Administrative Code sets energy standards for buildings, rebates/tax credits are provided for installation of renewable energy systems, and the Flex Your Power program promotes conservation in multiple areas. Title 24 standards were most recently updated in 2017. At the local level, the City of San José as part of its Envision San José 2040 General Plan, has goals (Goal MS-14) and policies in place to reduce per capita energy consumption and increase efficiency by at least 50 percent compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 (Green Vision) level through 2040.

3.6.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR identified less-than-significant impacts related to implementation of the Master Plan for the potential to result in the wasteful and/or unnecessary consumption of energy.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
VI. ENERGY — Would the project:					
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒	☐

Discussion

a, b) Both construction and operation of the Project would involve expenditure of energy.

Construction

The Plant Master Plan EIR concluded that energy consumption associated with construction of Facility Improvements would not have significant impacts related to energy because it would not: result in long-term depletion of non-renewable energy resources; permanently increase reliance on energy resources that are not renewable; reduce or interrupt existing electrical or natural gas services due to insufficient supply; or include inherently wasteful or unnecessary use of energy. Similar construction activities as those described in the Plant Master Plan EIR would occur under the Project, including activities that involve the use of heavy machinery for pipeline installation, building construction, excavation/grading and stockpiling activities. Construction energy use would include both direct and indirect uses of energy. Direct energy use would include the consumption of fuel (typically gasoline and diesel fuel) for operation of construction equipment and vehicles. Energy in the form of electricity may also be consumed by some pieces of construction equipment, such as welding machines, power tools, and lighting; however, the amount of consumed electricity would be relatively minimal. Indirect energy use includes the energy required to make the materials and components used in construction. This includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing. Direct energy represents about one-quarter of total construction-related consumption while indirect energy use typically represents the remaining three-quarters (Hannon et al., 1978).

It is not possible to estimate the precise amount of construction-related energy demand at this stage as it depends on operating conditions of the equipment that cannot be predetermined. Therefore, the CEQA checklist focusses on the efficient use of energy as opposed to a quantification of the actual amount of energy consumed. Construction associated with the Project is expected to last 28 months. Construction activities would include use of heavy-duty construction equipment including excavators, dozers, graders, backhoes, rollers and cranes. Construction equipment typically consume diesel fuel. Additionally, offsite vehicles would be required to transport equipment, materials, and workers to the Project site during construction. On an average, construction activities would generate 4 one-way truck trips for the delivery of construction materials, 10 truck trips associated with hauling and up to 140 one-way worker commute trips (70 workers). It is assumed that haul trucks and vender trucks would be diesel-fueled, while the majority of worker trips are anticipated to utilize gasoline.

For a Project of this scope and size, consumption of fuel energy resulting from short-term construction activities would be temporary, localized, and would not represent a significant amount of fuel in comparison to the 685 million gallons of gasoline and 36 million gallons of diesel that were sold in Santa Clara County in 2017 (CEC, 2018). Vehicles used for Project construction and operation would be required to comply with all federal and state efficiency standards. Additionally, there are no Project characteristics or features that would be inefficient or that would result in the use of equipment and vehicles in a manner that would be less energy efficient than similar projects.

Fuel use for the Project would be consistent with typical construction and manufacturing practices, and energy standards such as the Energy Policy Acts of 1975 and 2005, and Title 24, which promote strategic planning and building standards that reduce consumption of fossil fuels, increase use of renewable resources, and enhance energy efficiency. Project construction would not require excessive or wasteful use of energy and would therefore not conflict with the applicable energy policies. Further, the energy consumption during construction would not result in long-term depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Construction activities would not reduce or interrupt existing electrical or natural gas services due to insufficient supply, and would not include inherently wasteful or unnecessary use of energy. Because Project construction would not interrupt existing local PG&E service and because project-specific construction-related energy demand would not be expected to have a material effect on energy resources, or result in wasteful or unnecessary use of energy, construction activities would result in a less-than-significant impact associated with energy consumption. Nonetheless, implementation of the City's standard permit conditions which include the Bay Area Air Quality Management District's basic mitigation measure, as described in Section 3.3, Air Quality, would reduce the amount of fuel energy consumed during the construction phase of the project by limiting unnecessary idling and through proper operation and maintenance of equipment.

Operation

Once the Project is operational, energy use primarily would be in the form of electricity to power the pumps, centrifuges, conveyors and other equipment at the new headworks facility and within the paved operational area. Electricity is currently generated onsite at the cogeneration facility with emergency power provided by standby diesel generators. The Project includes a new Electrical Building to house a new 4.16 kV power supply system to power new Project elements located on the Headworks 3 site. No additional standby generation would be required for the Project. The proposed Headworks facility would require approximately 9,591 megawatt hours (MWh) of energy per year once design capacity is reached in 2040. This includes the process energy demand as well as the energy demand associated with lighting, ventilation and air conditioning of the proposed Electrical Building.

As part of the Plant Master Plant EIR, headworks odor control was evaluated at a project level of detail, while the influent piping and demolition associated with the headworks was evaluated at a program level of detail. The increase in energy use associated with the headworks odor control project in the Plant Master Plan EIR was estimated to be 1,699 MWh. Estimates of the other Headworks-related energy needs were not available in the Plant Master Plan EIR as they were evaluated at a program level.

The Project would increase energy use over existing conditions and this increase would tend to conflict with several goals and polices of the City's General Plan, particularly those goals related to reducing energy consumption (Goal MS-14). However, this increase would not be considered wasteful, inefficient, and unnecessary. Implementation

of the Project is required to provide the essential services provided by the Facility to protect public health and water quality through reliable, high quality, cost-effective wastewater treatment. As detailed in the Project description, upgrades to the Headworks facilities and Emergency Basin proposed as part of the Project are needed to support this overall service due to the age and state of the infrastructure and changes in operational reliability and regulatory requirements.

Further, the Project would adhere to all applicable industry standards, plans, and policies that promote energy conservation during construction and operation. Replacing old pumps and other equipment with newer equipment would reduce operational inefficiencies and optimize energy consumption. Therefore, the Project's energy use during construction and operation would constitute a less than significant impact, same as identified in the adopted Plant Master Plan EIR, and no new or more significant impacts beyond those identified in the Plant Master Plan EIR would result. **Same Impact as Approved Project. (Less than Significant)**

References

California Energy Commission (CEC), 2018. California Annual Retail Fuel Outlet Report Results (CEC-A15) Energy Assessments Division, September 27, 2018.

Hannon et al., 1978, Energy and Labor in the Construction Sector. Article in Science Magazine. November 24, 1978.

3.7 Geology and Soils

3.7.1 Setting

The Project is located within the Plant Master Plan planning area. The setting of the Plant Master Plan area was described in the Plant Master Plan EIR. As described in the Plant Master Plan EIR, no faults zoned under the Alquist Priolo Earthquake Fault Zoning Act, or any other Holocene-active faults pass through the Project site, and the soils have moderate to very high expansion potential. The nature, scale, and timing of the Project have not changed in a manner that would further exacerbate existing geologic and seismic hazards at the Project site. While the location of the Project site has changed, the revised location would not intersect any additional known faults, or unstable or expansive soils. Setting discussions from the Plant Master Plan EIR for this resource area are therefore applicable to the entire Project area.

3.7.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to geology and soils:

- No impact associated with the Plant Master Plan related to: risk of loss, injury, or death related to the rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map; soils incapable of adequately supporting the use of septic tanks; risk of loss, injury, or death related to landslides; and substantial soil erosion or loss of topsoil.
- Less than significant impacts resulting from new or retrofitted Facility improvements (including the preliminary treatment facilities) related to: causing a risk of loss, injury, or death due to placement on an unstable geologic unit or expansive soil; and the risk of loss, injury, or death related to seismic-related ground failure, including liquefaction.
- Potentially significant, but mitigable to less-than-significant, impacts on a unique geological feature or paleontological resource were identified for all ground-disturbing activities of the Plant Master Plan, including the preliminary treatment facilities.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
VII. GEOLOGY AND SOILS — Would the project:					
a) Directly or indirectly cause 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.	☐	☐	☐	☒	☐

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
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 direct or indirect risks to life or property?	☐	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒	☐

Discussion

a.i) The Project lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity. As discussed in the Plant Master Plan EIR, while it is possible that surface rupture could occur outside of these zones, the risk of occurrence is not substantial.

The Plant Master Plan EIR concluded that there would be no impact from Plant Master Plan construction or operation that would affect a known earthquake fault because none are present onsite. While Headworks 3 has moved to a different location than was proposed for headworks facilities in the Plant Master Plan, the Project is still located within the boundaries of the Plant Master Plan area and involves construction and operation of facilities similar to those evaluated in the Plant Master Plan EIR. Therefore, impacts of the Project would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

a.ii, iii) As noted above, the Facility and the entire area bound by the Plant Master Plan analyzed in the Plant Master Plan EIR is located within a seismically active region. As a result, the Plant Master Plan components including the proposed facilities could be subject to strong seismic ground shaking, seismic failure, or liquefaction during an earthquake. All projects within the Plant Master Plan area would be required to comply with the California Building Code, the Seismic Hazard Mapping Act, and the conditions of

approval for grading and development permits, and as a result the Plant Master Plan EIR concluded that all Plant Master Plan development would have less-than-significant impacts with respect to seismic ground shaking and liquefaction. While the Project has moved to a different location than was proposed for headworks improvements in the Plant Master Plan, the Project is still located within the boundaries of the Plant Master Plan area and involves construction and operation of facilities similar to those evaluated in the Plant Master Plan EIR; the Project would therefore also be required to comply with the same requirements as the rest of Plant Master Plan development. Therefore, the impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction and operation beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

a.iv) The Plant Master Plan area has limited topographic relief, with elevations on site spanning a differential of less than 10 feet (Santa Clara County, 2018). Therefore, potential for landslides on the sites, including seismically induced landslides, during construction and operation is considered remote. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would still be located within the Plant Master Plan area. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction and operation beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

b) The Plant Master Plan evaluated potential impacts of the Plant Master Plan related to erosion and loss of topsoil in sections discussing water quality, hydrology, and land use (Plant Master Plan EIR Sections 4.10, 4.9, and 4.2, respectively). Impacts during construction and operation were evaluated for the entire Plant Master Plan area. Similar to as described for the Plant Master Plan, Project construction would involve construction staging, as well as ground disturbance during on site grading, excavation and trenching; once operational, Project components would either be buried underground (e.g., pipelines) or would include paved surfaces that drain to the new headworks facilities. Impacts associated with erosion and loss of topsoil during construction and operation are discussed in Sections 3.10 and 3.11 of this document. As described in those sections, impacts would be the same as identified in the Plant Master Plan EIR, and Project construction would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

c, d) As discussed in the Plant Master Plan EIR, soils throughout the Plant Master Plan area, including the Project site, are prone to various instabilities including long-term soil settlement, soils with high shrink-swell potential, and the possibility of shallow small-scale sloughing or slumping in subsurface excavations. The potential for seismic-related ground failure, including liquefaction, and landslides for the Project are discussed above under a.iii) and a.iv). All Facility improvement projects within the Plant Master Plan area would be required to comply with the California Building Code, Cal/OSHA requirements, and the conditions of approval for grading and development permits, and as

a result the Plant Master Plan EIR concluded that all Plant Master Plan development would have less-than-significant impacts with respect to unstable soils. While the Project has moved to a different location than was proposed for headworks improvements in the Plant Master Plan, the Project is still located within the boundaries of the Plant Master Plan area and involves construction and operation of facilities similar to those evaluated in the Plant Master Plan EIR; the Project would therefore also be required to comply with the same requirements as the rest of Plant Master Plan development. Therefore, the impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

e) The Project would not utilize septic systems or other alternative disposal systems for the disposal of wastewater. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

f) Impacts to paleontological resources were evaluated in Plant Master Plan EIR Section 4.14, Cultural Resources. As discussed there, soil disturbance up to 25 feet below ground surface in the Plant Master Plan area would be within young Holocene-age geologic units (artificial fill, bay mud, and alluvial fans less than 10,000 years old). While the bay mud may contain a variety of marine invertebrate remains and organic matter (mollusks, clams, foraminifera, microorganisms, etc.), such remains are not fossilized, are likely to exist in other Bay Mud deposits all around the Bay Area, and would not be considered significant or unique. While the Plant Master Plan EIR determined, in accordance with Society of Vertebrate Paleontology standards, that the paleontological potential of the Plant Master Plan is low, it concluded that a remote possibility of encountering fossils during excavations exists and that until examined by a qualified paleontologist, fossil encounter represents a potentially significant impact on paleontological resources. While the Project has moved to a different location and would involve deeper excavation than was proposed for headworks improvements in the Plant Master Plan, the Project is still located within the boundaries of the Plant Master Plan area and involves excavation in similar geologic units to those evaluated in the Plant Master Plan EIR. Therefore, the Project could encounter fossils, a potentially significant impact that would be reduced with implementation of Plant Master Plan EIR **Mitigation Measure CUL-4: Inadvertent Discovery of Paleontological Resources**. With implementation of the above measure, impacts on paleontological resources would be less than significant. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

Mitigation Measure CUL-4: Inadvertent Discovery of Paleontological Resources.

If paleontological resources, such as fossilized bone, teeth, shell, tracks, trails, casts, molds, or impressions are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find and the contractor shall notify ESD personnel and the PBCE Senior Environmental Planner. ESD or its contractor shall retain a qualified paleontologist to inspect the findings within 24 hours of discovery to assess the nature and importance of the find and, if necessary, develop appropriate treatment measures in conformance with Society of Vertebrate Paleontology standards, and in consultation with the PBCE Senior Environmental Planner.

References

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3.8 Greenhouse Gas Emissions

3.8.1 Setting

The environmental and regulatory settings relevant to greenhouse gases (GHGs) have not appreciably changed since the certification of the Plant Master Plan EIR. With regard to impacts from GHGs, both the BAAQMD and California Air Pollution Control Officers Association (CAPCOA) consider GHG impacts to be exclusively cumulative impacts; therefore, assessment of significance relative to the approved Plant Master Plan EIR is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere.

In 2011, the City adopted the *Envision San José 2040 General Plan* (2040 General Plan). As part of the General Plan update, the City adopted a *Greenhouse Gas Reduction Strategy for the City of San José* (GHG Reduction Strategy; City of San José, 2015a) in accordance with the BAAQMD CEQA Guidelines and CEQA Guidelines Section 15183.5. The GHG Reduction Strategy identifies policies and measures to reduce GHG generation within the City. Relevant policies include:

> ***MS-5.6:*** Enhance the construction and demolition debris recycling program to increase diversion from the building sector.
>
> ***MS-6.3:*** Encourage the use of locally extracted, manufactured or recycled and reused materials including construction materials and compost.
>
> ***MS-6.12:*** Promote use of recycled materials, including reuse of existing building shells/ elements, as part of new construction or renovations.

The City's GHG Reduction Strategy was approved as part of the City's 2040 General Plan and analyzed in the 2040 General Plan Integrated Final Program Environmental Impact Report (PEIR) (certified in November 2011) and updated in the Supplemental PEIR (certified in December 2015). The City of San José agreed to prepare a Supplemental PEIR to supplement the information included in the 2040 General Plan Final PEIR regarding GHG emissions and global climate change. The Supplemental PEIR reevaluated the significance of projected GHG emissions associated with existing and planned land uses in San José and the consistency of the General Plan and GHG Reduction Strategy with the California Climate Change Scoping Plan and other plans (City of San José, 2015b). Compliance with the City's 2040 General Plan and GHG Reduction Strategy would ensure that the Plant Master Plan that was evaluated in the certified EIR is consistent with the State's AB32 goals.

3.8.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of many capital projects at the Facility. The Plant Master Plan EIR identified the following impacts related to greenhouse gas emissions:

- Both project- and program-level improvements would be consistent with the General Plan GHG Reduction Strategy up to the year 2020, and therefore impacts were determined to be less than significant.

- Subsequent to year 2020, the project- and program-level improvements analyzed in the Plant Master Plan EIR were found to make a cumulatively considerable contribution to City-wide emissions, which were determined by the EIR for the 2040 General Plan to be significant and unavoidable by 2035, even with implementation of the measures contained in the GHG Reduction Strategy. The conclusions in the 2040 General Plan PEIR have not changed based upon the supplemental information on GHG emissions presented in the Supplemental PEIR (certified in December 2015).

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
VIII. 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

a) GHG emissions worldwide cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate sufficient GHG emissions on its own to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects in San José, the entire state of California, across the nation, and around the world contribute cumulatively to the phenomenon of global climate change and its associated environmental impacts.

Construction

The combustion of diesel fuel to provide power for the operation of various construction equipment results in the generation of GHGs. Construction emissions associated with the Project were estimated using Project-specific information such as the types, number, and horsepower rating of construction equipment used, their daily usage in terms of hours per day, and the number of days each piece of equipment is used over the construction period. **Appendix B** contains the data and assumptions used to estimate the construction-phase GHG emissions that would be associated with the Project.

Carbon dioxide (CO_2) emissions for offroad construction equipment were estimated using emission factors from California Air Resources Board's OFFROAD2017 model. Emission factors for methane (CH_4) and nitrous oxide (N_2O) were obtained from The Climate Registry (TCR) for diesel fuel combustion in construction equipment (TCR, 2017a). N_2O and CH_4 emissions were multiplied by their respective global warming potentials (25 and 298) and added to the CO_2 emissions to obtain carbon dioxide equivalent (CO_2e) emissions.

GHG emissions from onroad motor vehicles used during construction were estimated using EMFAC2017 emissions factors for CO_2, N_2O and CH_4. GHG emissions in the form of CO_2e were calculated by multiplying the estimated total miles travelled by Project-related

worker vehicles and trucks 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. The Project is expected to generate an average of 70 worker commute round trips per day along with ten hauling truck trips and four material delivery truck trips per day. The exact end points for the daily trips are not known at this time, so the on-road emission estimates were developed using default trips lengths in CalEEMod. Daily emissions by vehicle class (i.e., light-duty gasoline-fueled automobiles, trucks and heavy-duty trucks) were estimated using the EMFAC2017 emission factors multiplied by the number of Project-related vehicle trips and the estimated daily mileage traveled by the vehicles.

In addition, indirect GHG emissions would be generated from the use of electricity for the pumping and distribution of water that would be used for dust suppression during the construction period. It is estimated that approximately 1,000 gallons of water would be used daily on an average for soil compaction and dust suppression. Construction contractors would obtain temporary water for use during construction from the City's water systems. Non potable water would be obtained from hydrants or hose valves in the Facility. Indirect short-term electricity usage-related GHG emissions associated with water use for construction activities were estimated using use factors established by the California Energy Commission (CEC) and emission rate from PG&E and the U.S. Environmental Protection Agency (USEPA) (CEC, 2005; PG&E, 2018; USEPA, 2018).

Table 3.8-1 shows the GHG emissions estimated to be generated by construction activities associated with the Project. As shown in the table, Project construction would generate a total of approximately 1,810.5 metric tons CO_2e over the 28-month construction period. When amortized over a project life of 30 years, annual amortized construction emissions would be 60.3 metric tons CO_2e. The BAAQMD does not have adopted significance thresholds for construction-related GHG emissions.

TABLE 3.8-1
TOTAL ESTIMATED GHG EMISSIONS FROM CONSTRUCTION

Source	GHG Emissions (metric tons) CO_2e
Offroad Construction Equipment	1,091
Onroad Vehicle Trips	719.2
Indirect Emissions from Water Use for Dust Suppression during Construction	0.3
Total GHG Emissions	**1,810.5**

SOURCE: Appendix B.

Therefore, the amortized construction emissions are considered along with the operational emissions discussed below. Appendix B contains details on the calculations and assumptions used to estimate construction GHG emissions.

Operations

Once the Project is operational, GHG emissions would primarily be generated indirectly from the use of electricity. Project operations would not increase staff at the facility. The Project would not change the existing projected capacity of the Headworks Facilities, and thus would not alter the truck trips required for solids removal. Therefore, no increase in direct GHG emissions from Project operations is anticipated.

The total operational power demand associated with the Project includes the process power demand as well as the power required at the proposed electrical building for lighting, ventilation and air conditioning. The total energy demand for the Project is estimated at 15,767 megawatt hours per year (MWh/year). A comparison to the energy demand assumed in the Plant Master Plan EIR is not possible as only the Headworks odor control was evaluated at a Project level of detail. The remaining components of the Headworks facilities were evaluated at a program level.

Indirect GHG emissions generated by the Project's use of electricity from PG&E's electrical grid were estimated using an emission factor of 294 pounds of CO_2 per MWh based on data for 2016 (PG&E, 2018). Nitrous oxide (N_2O) and methane (CH_4) emission factors for electricity were obtained from the USEPA (USEPA, 2018). GHG emissions in the form of CO_2e were calculated by 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.

Project operational emissions are shown in **Table 3.8-2** below.

TABLE 3.8-2
GHG EMISSIONS FROM PROJECT OPERATIONS

Operational Sources	Annual CO_2e Emissions (metric tons)
Indirect Electrical Grid Emissions	2,541
30-year amortized construction emissions	60.3
Total	**2,601.3**

SOURCE: Appendix B.

For all projects that are not stationary sources, the BAAQMD recommends a GHG significance threshold of 1,100 metric tons of CO_2e per year. As shown in the table above, the Project's operational GHG emissions combined with the 30-year amortized construction emissions, described above under construction, would exceed the BAAQMD significance threshold for operation, and the Project would lead to a significant impact on the environment.

The Plant Master Plan EIR also identified significant impacts for projects implemented beyond 2020 and identified Mitigation Measure GHG-1a to reduce the severity of this impact from projects proposed at the Facility. Measures applicable to the Project from Mitigation Measure GHG-1a of the Plant Master Plan EIR are listed below. This mitigation measure includes an update to remove those portions that were specific to the

economic development projects. The adjusted mitigation measure does not change the original impact conclusion, nor is it considerably different from that analyzed in the Plant Master Plan EIR.

Mitigation Measure GHG-1a: GHG Reduction Strategy Measures.

The following measures identified in the GHG Reduction Strategy shall be implemented:

- An evaluation of post 2020 operational energy efficiency and associated design measures shall be completed for energy-intensive Facility improvements.
- The proposed number of parking spaces would not exceed requirements in the Municipal Code.

While the recommended mitigation measures would minimize potential impacts, the emissions associated with the Project would still contribute to an expected long-term significant and unavoidable impact identified in the City's 2040 General Plan PEIR. Therefore, it is reasonable to assume that emissions from long-term (i.e., post 2020) operation of the Project would have a significant effect on the environment, resulting in a significant unavoidable impact.

Therefore, this impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during operation compared to those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Significant Unavoidable)**

b) The City has established a GHG Reduction Strategy to meet the recommended considerations outlined in CEQA Guidelines Section 15064.4 and the recent standards for "qualified plans" as set forth by BAAQMD. This GHG impact analysis focuses on the Project's conformance with the City's GHG Reduction Strategy.

The City's GHG Reduction Strategy includes policies and measures to reduce GHG emissions. Adoption of a GHG Reduction Strategy provides environmental clearance for GHG impacts of proposed development as per the BAAQMD CEQA Guidelines and CEQA Guidelines Section 15183.5. Project evaluation in light of City requirements is conducted by evaluating Project conformance with the City's GHG Reduction Strategy.

In order to conform to the GHG Reduction Strategy, projects must be consistent with the Land Use/Transportation assumptions in the 2040 General Plan and incorporate applicable features into the project that meet the mandatory implementation policies. The Project would not involve changes in land uses as envisioned under the 2040 General Plan, and therefore, would be consistent with the Land Use/Transportation assumptions. Project structures would be subject to the City's Green Building Ordinance as applicable to achieve operational emissions reductions consistent with the GHG Reduction Strategy. The 2040 General Plan includes a number of actions to increase the use of recycled materials used during construction, and reduce construction and demolition debris. To ensure that the Project would not conflict with the applicable GHG reduction policies of

the 2040 General Plan, the Project would comply with applicable General Plan Policies for reduction of GHG emissions, including MS-5.6 and MS-6.3. Therefore, based on a review of anticipated Project emissions in comparison to the City's GHG Reduction Strategy and the BAAQMD CEQA Guidelines, the Project is expected to be consistent with the 2040 General Plan and GHG Reduction Strategy. Consequently, it would also not be considered to conflict with the State's AB 32 GHG emissions reduction goals. This impact would be the same as identified in the Plant Master Plan EIR, and would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

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3.9 Hazards and Hazardous Materials

3.9.1 Setting

The environmental setting relevant to Hazards and Hazardous Materials for the Project site has not changed in comparison to that described in the certified Plant Master Plan EIR. While the footprint of the Project site has changed as shown in Figure 2-2, the revised footprint would not intersect any additional known hazardous materials sites. Setting discussions from the certified EIR for this resource area are therefore applicable to the entire Project area.

3.9.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to hazards and hazardous materials:

- No impact related to potential public or private airport related safety hazards, emission or handling of hazardous substances within a quarter mile of a school, or potential interference with emergency plans.
- Less than significant impacts associated with the accidental release of hazardous building and construction materials, transport or use of hazardous materials, and potential exposure to fires.
- Potentially significant, but mitigable to less than significant, impacts related to accidental release of hazardous materials in the soil and groundwater into the environment, activities located on a hazardous materials site, and accident conditions related to rupture of subsurface utilities. Mitigation applied to these potential impacts included a pre-construction hazardous materials assessment, implementation of a health and safety plan, implementation of a soil and groundwater management plan, and coordination with regulatory agencies and utility providers.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
IX. 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?	☐	☐	☐	☒	☐

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒	☐

Discussion

a) The Plant Master Plan EIR concluded that all Facility improvements, including preliminary treatment facilities improvements, would result in less-than-significant impacts related to the routine transport, use or disposal of hazardous materials because the storage, use, and transport of hazardous materials associated with the wastewater treatment facilities would occur in compliance with legal requirements regardless of their proximity to surrounding land uses. While the Project has moved to a different location than was proposed in the Plant Master Plan, the same legal requirements regarding hazardous materials storage, use, and transport would apply to the Project. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction and operation beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant Impact)**

b, d) The Plant Master Plan EIR concluded that, due to past releases of hazardous materials on and adjacent to the Plant Master Plan area, hazardous materials could be encountered during construction of Facility improvements and other structures associated with the Plant Master Plan, a potentially significant impact. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would still be located within the Plant Master Plan area, and therefore excavation activities associated with the Project could also encounter and accidentally release hazardous materials, a potentially significant impact. Implementation of mitigation measures identified in the Plant Master Plan EIR, and listed below, for the potential upset and release of hazardous materials and the location on a hazardous materials site would minimize potential impacts.

Mitigation Measure HAZ-1a: Pre-Construction Hazardous Materials Assessment.

Prior to construction, ESD or its contractor shall ensure that a limited soil and/or groundwater investigation is performed at proposed construction work areas to characterize soil and groundwater quality. If the results reveal soil and/or groundwater contamination exist in excess of applicable regulatory screening levels (Environmental Screening Levels or California human health screening levels) for the proposed site use, the City shall contact the appropriate regulatory agency (the

Santa Clara County Department of Environmental Health [SCCDEH], the Regional Water Quality Control Board [RWQCB], or Department of Toxic Substances Control [DTSC]) as appropriate. ESD or its contractor shall complete subsequent site investigations and/or remedial activities required by the regulatory agency to ensure that residual impact, if any, shall not pose a continuing significant threat to groundwater resources, human health, or the environment.

The results of the pre-construction hazardous materials assessment shall be incorporated into the Site Health and Safety Plan prepared in accordance with **Mitigation Measure HAZ-1b**, below, and the Soil and Groundwater Management Plan prepared in accordance with **Mitigation Measure HAZ-1c**, below, to determine whether: specific soil and groundwater management and disposal procedures for contaminated materials are required; excavated soils are suitable for reuse; and construction worker health and safety procedures for working with contaminated materials are required.

Mitigation Measure HAZ-1b: Health and Safety Plan.

ESD or its contractor shall retain a qualified environmental professional to prepare a site-specific Health and Safety Plan (HASP) in accordance with federal OSHA regulations (29 CFR 1910.120) and Cal/OSHA regulations (8 CCR Title 8, Section 5192). Because anticipated contaminants vary depending upon the location of proposed improvements in the Project area and may vary over time, the HASP shall address site-specific worker health and safety issues during construction. The HASP shall include the following information:

- Results of sampling conducted in accordance with Mitigation Measure HAZ-1a.
- All required measures to protect construction workers and the general public by including engineering controls, monitoring, and security measures to prevent unauthorized entry to the construction areas and to reduce hazards outside of the construction areas. If prescribed contaminant exposure levels are exceeded, personal protective equipment shall be required for workers in accordance with state and federal regulations.
- Required worker health and safety provisions for all workers potentially exposed to contaminated materials, in accordance with state and federal worker safety regulations, and designated qualified individual personnel responsible for implementation of the HASP.
- The contractor shall have a site health and safety supervisor fully trained pursuant to hazardous materials regulations be present during excavation, trenching, or cut and fill operations to monitor for evidence of potential soil contamination, including soil staining, noxious odors, debris or buried storage containers. The site health and safety supervisor must be capable of evaluating whether hazardous materials encountered constitute an incidental release of a hazardous substance or an emergency spill. The site health and safety supervisor shall implement procedures to be followed in the event of an unanticipated hazardous materials release that may impact health and safety. These procedures shall be in accordance with hazardous waste operations and regulations and specifically include, but are not limited to: 1) immediately stopping work in the vicinity of the unknown hazardous materials release;

2) notifying SCCDEH, RWQCB, or DTSC; and 3) retaining a qualified environmental firm to perform sampling, remediation, and/or disposal.

- Documentation that HASP measures have been implemented during construction.
- Provision that submittal of the HASP to ESD, or any review of the contractor's HASP ESD, shall not be construed as approval of the adequacy of the contractor as a health and safety professional, the contractor's HASP, or any safety measure taken in or near the construction site. The contractor shall be solely and fully responsible for compliance with all laws, rules, and regulations applicable to health and safety during the performance of the construction work.

Mitigation Measure HAZ-1c: Soil and Groundwater Management Plan.

If hazardous materials or contaminated soil and groundwater above regulatory screening levels are identified under the pre-construction hazardous materials assessment, done in accordance with Mitigation Measure HAZ-1a, ESD shall require the construction contractor to prepare and implement a Soil and Groundwater Management Plan that specifies the method for handling and disposal of contaminated soil and groundwater prior to construction.

The Soil and Groundwater Management Plan shall establish the sampling and laboratory analysis program which may include the following: 1) analysis of subsurface soil samples within the Project site for total petroleum hydrocarbons (as gasoline, diesel, and waste oil), Title 22 metals, and volatile organic compounds (VOCs) or any other chemicals of concern to evaluate the potential presence of contamination; 2) groundwater samples if subsurface excavations are anticipated to require dewatering;. and 3) additional analyses for VOCs and semi-volatile organic compounds (SVOCs) for groundwater samples collected at construction locations within 1,000 feet of adjacent landfills.

The Soil and Groundwater Management Plan shall include all necessary procedures to ensure that excavated materials and fluids generated during construction are stored, managed, and disposed of in a manner that is protective of human health and in accordance with applicable laws and regulations. The Plan shall include the following information.

- Step-by-step procedures for evaluation, handling, stockpiling, storage, testing, and disposal of excavated material, including criteria for reuse and offsite disposal. All excavated materials shall be inspected prior to initial stockpiling, and spoils that are visibly stained and/or have a noticeable odor shall be stockpiled separately to minimize the amount of material that may require special handling. In addition, excavated materials shall be inspected for buried building materials, debris, and evidence of underground storage tanks; if identified, these materials shall be stockpiled separately and characterized in accordance with landfill disposal requirements. If some of the spoils do not meet the reuse criteria and/or debris is identified, these materials shall be disposed of at a permitted landfill facility.
- Procedures to be implemented if unknown subsurface conditions or contamination are encountered, such as previously unreported tanks, wells, or contaminated soils.

- Procedures for containment, handling and disposal of groundwater generated from construction dewatering, the method to be used to analyze groundwater for hazardous materials likely to be encountered and the appropriate treatment and/or disposal methods.

The Pre-Construction Hazardous Materials Assessment (HAZ-1a), Health and Safety Plan (HAZ-1b), and Soil Management Plan (HAZ-1c) shall be submitted to the PBCE Senior Environmental Planner for approval.

With implementation of these measures, impacts associated with hazards and hazardous materials from the Project construction would be the same as identified in the Plant Master Plan EIR and the Project would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant with Mitigation)**

c) As discussed in the Plant Master Plan EIR, there are no schools within 0.25-miles of the Plant Master Plan area, which includes the Project site. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction and operation beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

e) As discussed in the Plant Master Plan EIR, there are no airports within 2 miles of the Plant Master Plan area, which includes the Project site. This impact would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts during construction and operation beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

f) The Plant Master Plan EIR concluded that the Plant Master Plan would not affect adopted emergency response or emergency evacuation plans because Santa Clara County had not adopted such a plan. Santa Clara County has adopted an emergency operations plan. The Santa Clara County Operational Area Emergency Operations Plan establishes emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of response in the event of an emergency. This plan does not designate specific emergency response or evacuation routes within or surrounding the Facility.

The Facility has developed a Contingency Plan for Operation Under Emergency Conditions (Contingency Plan) as required by the Facility's NPDES permit. This Contingency Plan outlines actions required at the Facility in response to extreme flooding, earthquakes, fire, and accidental release of hazardous materials. In the case of an ammonia, chlorine, or sodium bisulfate release, should nonessential Facility personnel need to be evacuated, the Contingency Plan indicates personnel should proceed south along Zanker Road and should not proceed on Los Esteros Road. The Project would follow this contingency plan during operation if there is an accidental release of hazardous materials. Construction and operation of the Project would not require closure of Zanker Road, and therefore would not impair implementation of or interfere with the Contingency Plan. Construction and operation of the Project would not affect evacuation

routes and therefore would have no impact on emergency response or evacuation plans. **Same Impact as Approved Project (No Impact)**

g) The Plant Master Plan EIR concluded that the Plant Master Plan would result in less-than-significant impacts related to wildland fires because the Plant Master Plan area is not within a high fire hazard area, the potential to expose people or structures to a significant risk involving fires is low due to the distance between Facility structures and other land uses, and applicable existing laws and regulations are designed to minimize fire hazards to the public and the environment. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would still be located within the Plant Master Plan area. Project structures and activities would comply with existing safety regulations and industry standards that reduce the risk of fire, ensuring the risk of fire would be less than significant. Through compliance with legal requirements related to hazardous materials storage and fire protection, potential risks of fire associated with construction and operation of the Project would be the same as those in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

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State Water Resources Control Board (SWRCB), 2019. GeoTracker Database search, geotracker.waterboards.ca.gov, accessed March 5, 2019.

3.10 Hydrology and Water Quality

3.10.1 Setting

The Project is located within the Plant Master Plan area. Environmental Setting information relevant to hydrology and water quality within the Project area remains the same as discussed in the certified Plant Master Plan EIR. The setting discussions from the certified EIR for this resource area are therefore applicable to the entire Project area.

Additional legislation and regulations related to groundwater have been adopted since certification of the Plant Master Plan EIR. On May 24, 2016, the Santa Clara Valley Water District adopted Resolution No. 16-51 establishing the Santa Clara Valley Water District as the groundwater sustainability agency for the Santa Clara groundwater subbasin. The *2016 Groundwater Management Plan for the Santa Clara and Llagas Subbasins* (GWMP) was adopted on November 22, 2016, and was submitted to the California Department of Water Resources as an alternative to a groundwater sustainability plan on December 21, 2016 (Santa Clara Valley Water District, 2016). The GWMP identifies groundwater recharge areas, water budgets, and sustainability goals, and describes programs and activities to maintain a reliable groundwater supply and protect groundwater quality.

Since certification of the Plant Master Plan EIR, the City has undertaken flood protection planning for the Facility, and in 2016 identified recommendations and guidelines for flood protection for future CIP Projects at the Facility (called the "Flood Protection Guidelines"). The purpose of the Flood Protection Guidelines is to provide the Facility with a set of guidelines to follow in order to adequately protect existing and future planned facilities from potential flooding that could reach the Facility (including sea level rise). Guidelines for both existing and new structures were developed, addressing different categories and subcategories of facilities, such as below grade, at grade, and above grade structures. The recommendations in the Flood Protection Guidelines consider the City's 2040 General Plan language (specifying that the Facility be protected from the 500-year recurrence interval event) as the governing requirement and design basis, as it is the strictest and most closely reflects the national standard for critical facilities used by FEMA.

The Flood Protection Guidelines identify two preferred options for overall Facility flood protection, one option to be implemented if the Shoreline Levee Project is not constructed, and one option if the Shoreline Levee Project is constructed. Without the Shoreline Levee Project, a system of interconnected engineered berms at elevation 14.6 feet NAVD88 (representing the 500-year flood elevation plus an upper range estimate of sea level rise, without freeboard) around the main Facility operational area is recommended. With the Shoreline Levee Project, a similar system of interconnected engineered berms around the Facility, to an elevation of 13.1 feet NAVD88 (representing the 500-year flood elevation without sea level rise or freeboard), is recommended.

3.10.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to hydrology and water quality:

- No impact related to placing housing within a 100-year flood hazard area and exposure of people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.
- Less than significant impacts for degradation of receiving waters due to generation and emission of construction-related water quality pollutants, reduced water quality downstream of the project site due to storm water discharges during project operations, alteration of downstream/receiving water quality, and increased risks associated with coastal flooding.
- Potentially significant, but mitigable to less than significant, impacts for potential for increased scour and erosion from restoration of Pond A18, alteration of pond or downstream water quality due to proposed operations of Pond A18, increased risk of flooding due to runoff associated with increases in impervious area, potential to cause saltwater intrusion of regional groundwater sources, and depletion of groundwater supplies or interference with groundwater recharge.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
X. HYDROLOGY AND WATER QUALITY — Would the project:					
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of imperious surfaces, in a manner which would:	☐	☐	☐	☒	☐
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒	☐
iii) 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; or	☐	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk or release of pollutants due to project inundation?	☐	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒	☐

Discussion

a) **Construction**

The Plant Master Plan EIR concluded that while construction activities could result in the release of sediment and other water quality pollutants, implementation of stormwater best management practices pursuant to the required Construction General Permit would control the release of pollutants such that impacts to water quality are less than significant. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would be required to comply with the Construction General Permit, same as the Facility improvements evaluated in the Plant Master Plan EIR. The Construction General Permit stormwater control requirements would apply to the entire Project area, including the Soil Disposal Area.

Groundwater is anticipated to occur within excavations at the Project site, as it has been encountered at between three and 13 feet below ground surface during construction activities for other Projects at the Facility (Brown & Caldwell, 2018). Excavations associated with the Project would require dewatering operations because the excavations would be deeper than the local groundwater table.[25] As discussed in Chapter 2, Project Description, groundwater encountered during excavations would be pumped to settling tanks and then to the Headworks of the Facility for treatment. Pumped groundwater would not be released into the surrounding environment.

Implementation of BMPs and treatment of pumped groundwater would reduce water quality impacts during construction such that impacts would be the same as identified in the Plant Master Plan EIR. Project construction would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

Operation

Project operation would improve existing wastewater treatment processes at the Facility, in continued compliance with the existing the wastewater discharge NPDES permit for the Facility (Order No. R2-2014-0034 and NPDES Permit No. CA0037842). Therefore, the Project would not violate any water quality standards or waste discharge requirements.

The Plant Master Plan EIR evaluated water quality impacts resulting from the installation of additional impervious surface area in the Plant Master Plan planning area, including for Facility improvements. The Plant Master Plan EIR concluded that new impervious areas created as part of Facility improvements would not degrade water quality because treatment of stormwater generated at these areas would be required as part of the Facility's NPDES permit. While the Project has moved to a different location than was proposed in

[25] Groundwater dewatering involves the removal of water from the excavation at a rate equal to or greater than the rate of groundwater entering the excavation, which is typically accomplished by the use of surface pumps, submersible pumps, and in some cases, by the use of extraction wells placed at a given distance around the excavation location. Pumps extract the water from the excavation and pipes discharge the water to open ground, tanks or directly to receiving water sources. The purpose of dewatering is to lower the water table to below the depth of excavation to provide access to desired depth.

the Plant Master Plan, the Project includes new storm water collection facilities that would drain the newly paved areas and route the water to the new Headworks for treatment. Water quality pollutants from paved areas would be minimized through the Facility's treatment process (as required by the Facility's NPDES permit). Therefore, impacts related to the degradation of receiving waters due to Project operations would be the same as identified in the previously approved Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

b) **Construction**

The Plant Master Plan EIR concluded that groundwater dewatering during construction of the Facility improvements, including preliminary treatment facilities, would have less-than-significant impacts on groundwater supplies or recharge because dewatering would be temporary, would occur within the shallow aquifer which is not used for drinking water, and would be limited in geographic area. While the Project has moved to a different location than was proposed in the Plant Master Plan, dewatering of excavations during construction would be temporary and occur within the shallow groundwater. Construction activities would not result in an increase of impervious surfaces; thus, the impact to groundwater during construction of the Project facilities would be temporary and confined to the vicinity of the excavation.

Because groundwater from the shallow aquifer is not used for any purposes in the vicinity of the Project site, and because the duration of groundwater dewatering would be limited to the construction period, groundwater dewatering would not decrease groundwater supplies such that the Project may impede sustainable groundwater management of the Santa Clara groundwater subbasin. For these reasons, Project construction would not alter the groundwater system such that sustainable groundwater management would be impeded. Project construction would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

Operation

The Plant Master Plan EIR concluded that operation of all Facility improvements, including preliminary treatment, would not adversely affect groundwater supplies or recharge because operation would not involve additional extraction of groundwater. The Project does not include installation of any groundwater supply wells and thus would not lower the local groundwater table through operation of onsite groundwater wells. The Project would install impervious surface in an area that was not considered as impervious in the Plant Master Plan EIR; however, the area where new impervious surface would be created by the Project is in the "confined" area and not considered a recharge area for the Santa Clara groundwater subbasin (Santa Clara Valley Water District, 2016). For these reasons, Project operations would not alter the groundwater system such that sustainable groundwater management would be impeded, and operation impacts to sustainable groundwater management of the Santa Clara groundwater subbasin would be less than significant. Therefore, Project operations would not result in any new or more significant

impacts related to sustainable groundwater management beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

c.i, ii, iii) **Construction**

The Plant Master Plan EIR evaluated impacts resulting from the installation or replacement of impervious surfaces in the Plant Master Plan area, and from modifications to the existing local drainage characteristics. The Plant Master Plan EIR considered impacts to be significant if the volume and rate of runoff associated with the Plant Master Plan would be sufficient to result in inundation of important structures and facilities (that are not already subject to flooding or ponding during peak rain events), or result in the release of untreated sewage in a 100-year runoff event.

The Plant Master Plan EIR concluded that implementation of stormwater best management practices during construction, as required for compliance with the Construction General Permit, would ensure changes to drainage patterns during construction would result in less-than-significant impacts. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would be required to comply with the Construction General Permit, same as the Facility improvements evaluated in the Plant Master Plan EIR. Therefore, the effects of Project construction activity on drainage patterns, flooding, and stormwater drainage facilities would be the same as those identified in the previously approved Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

Operation

The Plant Master Plan EIR concluded that Facility improvements that result in new impervious area would locally increase stormwater runoff, and that a comprehensive drainage plan that includes source control and/or site design measures would be needed to mitigate impacts associated with this additional runoff (including impacts related to flooding and stormwater drainage systems). The Plant Master Plan EIR concluded that substantial erosion or siltation could result from improvements to Pond A18, but not other components of the Plant Master Plan.

As described in item a), during operations storm water from newly paved areas would drain to the Facility Headworks for treatment via new storm water collection infrastructure. All other disturbed areas would be restored to existing conditions. Therefore, the Project would not generate runoff in a manner that would result in flooding or exceed the capacity of existing or planned storm water drainage systems, and would not affect erosion and siltation on- or offsite. During operations the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant Impact)**

c.iv, d) **Construction**

Construction activities would be temporary and would not be anticipated to impede or redirect flood flows. Construction activities that involve ground disturbance or bring chemicals to the area as discussed above in checklist item a) could release pollutants due to

project inundation, however this risk would be reduced by BMPs implemented pursuant to the General Construction Permit. In addition, as discussed in Section 3.9, Hazards and Hazardous Materials, checklist item b), contaminated soil and groundwater would be controlled with implementation of Mitigation Measures HAZ-1a–c. Therefore, the risk of release pollutants during project construction would be less than significant and would not result in any new or more significant impacts than those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

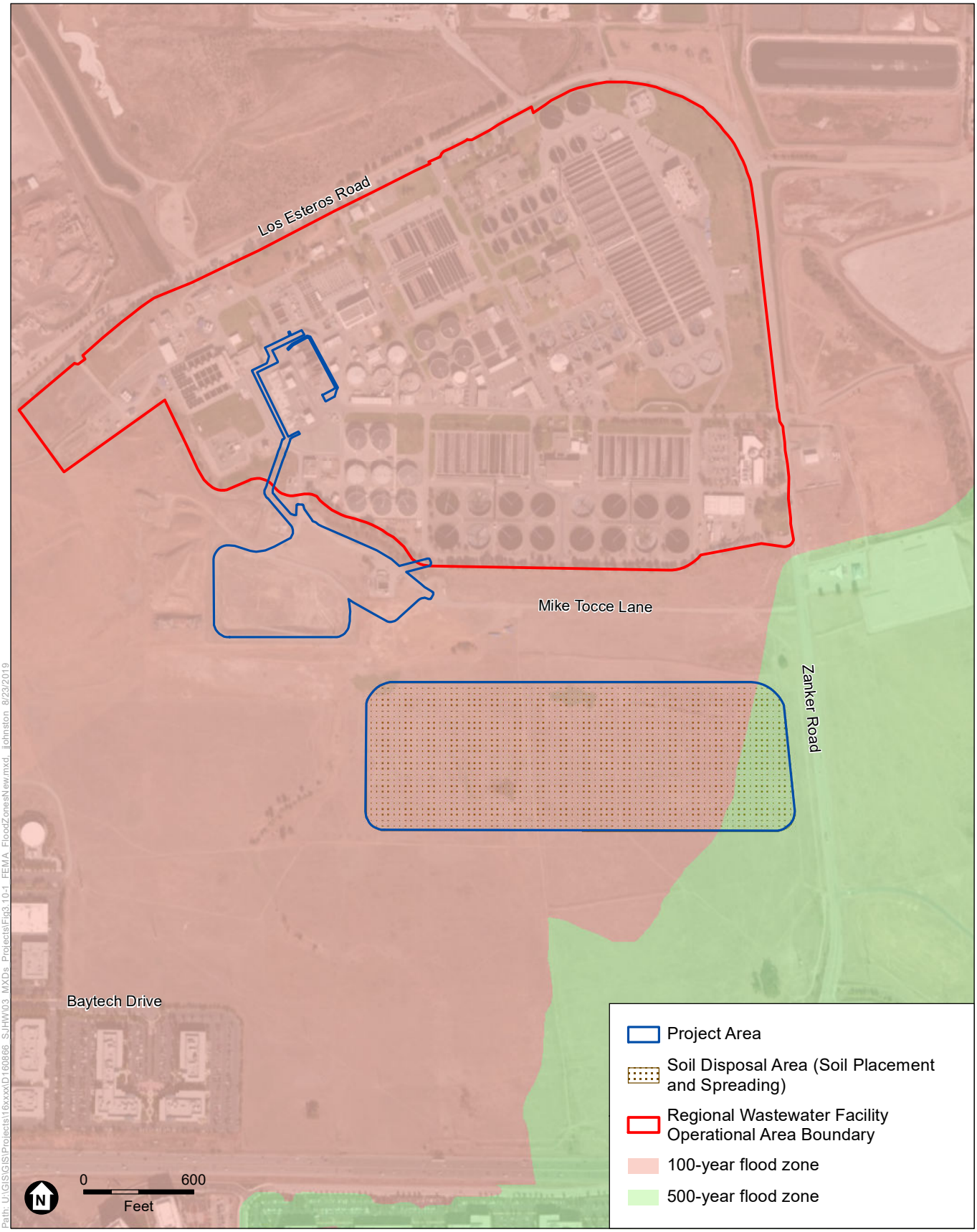
Operation

The Plant Master Plan EIR concluded that, while many of the Facility improvements and Plant Master Plan land uses south of the operational area would be constructed within the mapped FEMA 100-year floodplain, implementation of the City's standard flood proofing requirements (included in the Plant Master Plan EIR) would ensure that impacts related to impeding or redirecting flood flows would not be significant. While the Project has moved to a different location than was proposed in the Plant Master Plan, it is still within the Plant Master Plan area. FEMA has mapped the entire site within the 100-year coastal floodplain (FEMA Zone AE), as shown in **Figure 3.10-1**. The Project would include placing structures and development in the mapped FEMA 100-year floodplain, although the potential for those structures to impede or redirect flood flows is low. The Project would store potential water quality pollutants.

As discussed in detail above in Section 3.10.1, since certification of the Plant Master Plan EIR, the City has adopted Flood Protection Guidelines for the Facility that reflect the national standard for design of critical facilities used by FEMA. The increased risks associated with flooding would be reduced through implementation of recommendations from the Flood Protection Guidelines. Recommended program- and project-level flood protection measures that would reduce future flood risk for new facilities, including the new Headworks 3 facilities, include: completing the finished floors of new facilities above the design flood elevation; installing flood walls or barriers; surrounding the Facility or process areas within the Facility with engineered levees or berms built to the elevation required for protection; raising tunnel entrances above flood level; and designing new facilities to accommodate future levels of protection for the planned lifetime of the Facility.

Chemicals stored at the Headworks 3 facilities would be protected from accidental release during flooding by the flood protection measures that would be incorporated into Project design. The final Project design would also include specific flood protection measures in accordance with the status of the Shoreline Levee Project.

Design of the Project in accordance with the Flood Protection Guidelines would ensure impacts related to pollutant release during inundation would be less than significant. The Project site is not within a tsunami inundation area and would not be affected by a seiche (California Emergency Management Agency, 2009). Therefore, impacts from Project construction and operation would remain the same as those identified in the previously approved Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**



SOURCE: FEMA; ESRI, 2013; ESA 2019

San José Headworks Improvements and New Headworks

Figure 3.10-1
FEMA Flood Zones

ESA

e) **Construction**

The Plant Master Plan EIR evaluated whether the Plant Master Plan would substantially degrade water quality, but did not explicitly evaluate whether the Plant Master Plan would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

As discussed in item a), implementation of best management practices and treatment of pumped groundwater would reduce impacts related to the degradation of receiving waters due to generation and emission of construction-related water quality pollutants such that impacts would not be more significant than those identified in the previously approved Plant Master Plan EIR. Once construction is complete, stormwater runoff within and around the Headworks 3 site would be collected and routed into the new Headworks for subsequent treatment. Water quality pollutants from paved areas would be minimized through the Facility's treatment process (as required by the Facility's NPDES permit). Therefore, impacts related to the degradation of receiving waters due to Project operations pollutants would not be more significant than those identified in the previously approved Plant Master Plan EIR.

As discussed in item b), construction may require dewatering which causes groundwater levels to decline in the area around the excavation, which could interfere with the operation of nearby wells if present. However, the affected groundwater would be from the shallow aquifer, which is not used as a source of groundwater supplies. Further, the influence of pumping (i.e., cone of depression) would not extend far from the excavation and would never be greater than the depth of the excavation. The *2016 Groundwater Management Plan for the Santa Clara and Llagas Subbasins* (GWMP) was adopted on November 22, 2016, and was submitted to the California Department of Water Resources as an alternative to a groundwater sustainability plan on December 21, 2016. The GWMP identifies groundwater recharge areas, water budgets, and sustainability goals, and describes programs and activities to maintain a reliable groundwater supply and protect groundwater quality. Because groundwater from the shallow aquifer is not used for any purposes in the vicinity of the Project site, and because the duration of groundwater dewatering would be limited to the construction period, groundwater dewatering would not decrease groundwater supplies such that the project may impede sustainable groundwater management of the Santa Clara groundwater subbasin. For these reasons, Project construction would not alter the groundwater system such that sustainable groundwater management would be impeded, and construction impacts to sustainable groundwater management of the Santa Clara groundwater subbasin would be less than significant. Therefore, Project construction would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

Operation

The Project does not include installation of any groundwater supply wells and thus would not lower the local groundwater table through operation of onsite groundwater wells. The

area where new impervious surface would be created by the Project is in the "confined' area and not considered a recharge area for the Santa Clara groundwater subbasin. For these reasons, Project operation would not alter the groundwater system such that sustainable groundwater management would be impeded, and operation impacts to sustainable groundwater management of the Santa Clara groundwater subbasin would be less than significant. Therefore, impacts related to sustainable groundwater management due to Project construction and operations would not be more significant than those identified in the previously approved Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

California Emergency Management Agency, Tsunami Inundation Map for Emergency Planning, San Francisco Bay Area, December 9, 2009.

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

Santa Clara Valley Water District, 2016. 2016 Groundwater Management Plan for the Santa Clara and Llagas Subbasins (GWMP), November 22, 2016.

San Francisco Bay Regional Water Quality Control Board, Basin Plan, available at https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/bp_ch3.html. Accessed April 16, 2019.

San José-Santa Clara Regional Wastewater Facility, 2016. CIP Program RWF Flood Protection Study Final Flood Protection Guidelines for Future RWF Projects – Task 4.2, April 5, 2016.

3.11 Land Use and Planning

3.11.1 Setting

The project is located within the Plant Master Plan area. The Plant Master Plan included a proposed land use plan in addition to providing a list of future projects needed repair and replace the Facility's aging infrastructure and processes. With approval of the Plant Master Plan, changes to the proposed land use surrounding the operational area (as defined in the Plant Master Plan EIR) were approved and supersede the Envision San José 2040 General Plan designations. Portions of the Project facilities would be within the existing operational area and within the plant buffer area (as shown on the Plant Master Plan 30-year planning horizon concept plan; refer to Figure 1-3). In particular, headworks improvements are proposed within the area designated as Existing Operational Area, and Headworks 3 and lining of the Emergency Basin are proposed within the area designated as Plant Buffer.

3.11.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed land use impacts of the Plant Master Plan. The Plant Master Plan EIR identified the following impacts on land use and planning:

- No impact associated with physically dividing an established community.
- Less than significant impacts associated with conflicting 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.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XI. LAND USE AND PLANNING — Would the project:					
a) Physically divide an established community?	☐	☐	☐	☒	☐
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	☐

Discussion

a) The Plant Master Plan EIR concluded that the Plant Master Plan would not physically divide an established community because all of the proposed land uses and Facility improvements would occur within the Plant Master Plan planning area, and that while some of the proposed land uses would differ from existing onsite uses, there is not an established community present to be physically divided by the Plant Master Plan. While the Project has moved to a different location than was proposed in the Plant Master Plan, it would be within the Plant Master Plan planning area. Therefore, impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

b) Section 3.4, Biological Resources, discusses Project conflicts with applicable habitat or natural community conservation plans.

Conflicts with plans, policies, and regulations do not necessarily indicate a significant environmental land use impact under CEQA, unless the project substantially conflicts with a land use plan/policy that was adopted for the purpose or avoiding or mitigating an environmental effect, such that a substantial adverse physical change in the environment related to land use would result.

The Project has been moved to a different location than was proposed in the Plant Master Plan, and as a result would construct additional above-ground wastewater treatment facilities within the area designated as Plant Buffer in the Plant Master Plan. However, the Project would be entirely located within the Plant Master Plan project boundary. The Plant Master Plan proposed to construct underground pipelines in the subject area designated as Plant Buffer in the Plant Master Plan (refer to Section 2.2). While other existing wastewater treatment facilities are present within the Plant Buffer area, and constructing additional wastewater treatment facilities in this area could conflict with the intention of creating a buffer within the Plant Master Plan, the Plant Master Plan does not include a description of land use policies applicable to the Plant Buffer area, In addition, as discussed in this document, the Project would not result in significant environmental effects caused by the new location of the Project (refer, for example, to evaluations of odors in Section 3.3 and Hazardous Materials in Section 3.9). Therefore, while the Project could conflict with the Plant Master Plan, the Project would not cause a significant environmental impact due to this conflict.

With respect to City zoning districts, the Project is zoned as residential and agriculture. As described in the Plant Master Plan EIR, the existing zoning designation inconsistencies were analyzed and found to be less than significant as future economic development would require the future rezoning of these areas. With respect to the City's General Plan designations, the Project is designated as Public/Quasi-Public, a category that is typically used to designate public land uses such as water treatment facilities and the bufferlands. The proposed Project, being the same as the Plant Master Plan, would therefore be consistent with the intent of the Plant Master Plan, principles, and key elements and the General Plan land use designation.

The Soil Disposal Area is within an area designated for Recreation in the Plant Master Plan. Soil placement in this area would not conflict with the land use designation because the soil would be available for reuse or regrading as part of later development and would not preclude planned recreational land use. Therefore, the Project would not result in any new or more significant impacts that those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

City of San José, 2018. Envision San José 2040 General Plan. Adopted November 1, 2011, Amended February 27, 2018.

City of San José, 2019, Zoning Maps, available at http://www.sanjoseca.gov/index.aspx?nid=2037, accessed April 8, 2019.

3.12 Mineral Resources

3.12.1 Setting

The state and local land use and zoning designations with respect to mineral resources have not changed for the Project site or surrounding areas in comparison to that described in the Plant Master Plan EIR. The Project area is not within an aggregate resource area, and is mapped by the California Division of Mines and Geology being within Mineral Resource Zone 1. Mineral Resource Zone 1 identifies areas where adequate information exists to determine that significant aggregate resources are not present. Mineral resources are not present at the Project site.

3.12.2 Findings of Previously Certified EIR

- The certified Plant Master Plan EIR identified no impact related to the Project's potential to result in the loss of availability of a known mineral resource of value to the region and residents of the state.
- The EIR identified no impact related to the Project's potential to result in the loss of availability of a locally-important mineral resources recovery site delineated on a local general plan, specific plan, or other land use plan.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XII. 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) As noted above, no known mineral resources of importance to the state or region are located on the Project site. Additionally, no locally important mineral resource recovery sites are delineated for the Project area, including in a general plan or other land use plan. Therefore, the Project would not result in the loss of availability of mineral resources, or otherwise interfere with the extraction of existing mineral resources. Therefore, impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same as Impact as Approved Project. (No Impact)**

References

California Division of Mines and Geology, 1996. Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region. DMG Open-File Report, 1996.

3.13 Noise

3.13.1 Setting

The environmental and regulatory settings relevant to noise and vibration has not appreciably changed since the certification of the Plant Master Plan EIR. Sensitive receptors, as identified in the adopted Plant Master Plan EIR, have not changed and remain applicable to the Project. There are no sensitive receptors (e.g., residences, schools) adjacent to or in the immediate vicinity of the Project area, and no hospitals, daycare centers, or long-term care facilities within one mile of the Project area. The closest sensitive uses are residences located approximately 3,800 feet (0.7 miles) south of the Project site and over 4,100 feet (0.8 miles) to the west. The closest school is the George Mayne Elementary School located approximately 5,000 feet to the west.

3.13.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects to be constructed in areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to noise:

- No impacts associated with being located within an airport land use plan area or an area within two miles of a public airport or public use airport or private airstrip, or exposure of people residing or working in the area to excessive noise levels.
- Less-than-significant impacts from implementation of the Facility improvements associated with: temporary increase in noise and vibration exposure in the project vicinity from project-related demolition and construction; long-term traffic noise exposure in the project vicinity from project-related traffic; and increases in noise exposure to the surrounding existing environment from operations associated with project improvements. The certified Plant Master Plan EIR also identified less-than-significant impacts associated with exposure of future proposed uses south and east of the Facility operational area to unacceptable traffic noise levels from existing traffic.
- Potentially significant, but mitigable to less than significant, impacts to land uses south of the Facility operation area associated with temporary increase in noise exposure from project-related demolition and construction and permanent increases in noise exposure from operations associated with project improvements.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XIII. NOISE — Would the project result in:					
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒	☐

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
c) For a project located within the vicinity of a private airstrip or 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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	☐

Discussion

a) The Plant Master Plan EIR concluded that noise generated by construction of Facility improvements would not exceed the established significance threshold or typical ambient noise exposure at neighboring uses due to the distance to nearest residential or commercial sensitive receptors (which were located 3,500 and 2,000 feet, respectively, from construction locations). While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and approximately 3,800 feet from the nearest residential receptors. Project construction activities would take place over a period of 40 months starting in February 2020. Construction activities would temporarily and intermittently increase noise levels in the vicinity of the Project site. The City considers noise from Project construction requiring heavy machinery for more than 12 months (continuous) to be significant at residential uses within 500 feet and commercial uses within 200 feet of the construction. In this case, there are no existing or proposed residential uses within 500 feet or commercial uses within 200 feet of Project construction.[26] Therefore, estimated construction noise exposure associated with Project construction activities would not be expected to exceed the established significance threshold or typical ambient noise exposure at neighboring uses. Existing noise-sensitive uses in the Project vicinity would not be significantly affected by Project construction-related noise.

The Plant Master Plan EIR concluded that operations of the air scrubbers and pumps installed as part of new Headworks facilities would not result in a permanent increase in ambient noise levels due to the distance between Headworks facilities and the nearest residential receptors (4,300 feet away). While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and approximately 3,800 feet from the nearest residential receptors. Due to this distance, operational noise exposure would not result in a permanent increase in ambient noise levels or exceed the project threshold established in the Plant Master Plan EIR.

This would be a less-than-significant impact, same as that identified in the Plant Master Plan EIR, would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

26 Refer to Policy EC-1.7 of Chapter 3, Environmental Leadership, in *Envision San José 2040 General Plan*, adopted November 1, 2011.

b) The Plant Master Plan EIR concluded that vibration from construction of the Plant Master Plan would not produce significant vibration levels at acoustically sensitive uses due to the distance between the construction activities and the nearest sensitive uses. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and at a distance of 3,800 feet from the nearest sensitive receptors. Due to this distance, vibration from the operation of any impact and earthmoving equipment (which generate highest vibration) would attenuate to a less-than-significant level, and thus would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

c) The Plant Master Plan EIR concluded that the Plant Master Plan would have no impact related to noise from airports or airstrips because the Plant Master Plan area is more than 2 miles from a public use airport or a private airstrip. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and is no closer to a public use airport and does not include uses that would be affected by local aircraft operations, the Project would not be affected by aircraft noise. There would be no impact, and thus no new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

City of San José, 2018. Envision San José 2040 General Plan. Adopted November 1, 2011, Amended February 27, 2018.

City of San José, 2019, Code of Ordinances Municipal Code Section 20.50.300, available at https://library.municode.com/ca/san_jose/codes/code_of_ordinances?nodeId=TIT20ZO_CH20.50INZODI_PT5PEST_20.50.300PEST. Accessed April 23, 2019.

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

3.14 Population and Housing

3.14.1 Setting

The environmental setting relevant to Population and Housing for the Project has not changed in comparison to that described in the Plant Master Plan EIR. There is no existing housing located on or adjacent to the Project site.

3.14.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to population and housing:

- Less than significant direct growth inducement impacts because it is limited to improvements of the Facility's wastewater treatment facilities, changes to land use designations of certain Facility lands, and associated infrastructure improvements.
- Significant and unavoidable indirect growth inducement impacts in the future by removing insufficient wastewater treatment capacity and the lack of developable industrial land as potential obstacles to growth.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XIV. POPULATION AND HOUSING — Would the project:					
a) Induce substantial unplanned 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 people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐

Discussion

a) As concluded in the Plant Master Plan EIR, the Plant Master Plan would not directly contribute to the creation of additional housing or jobs within the Facility service area because the Plant Master Plan is limited to the provision of wastewater treatment infrastructure and capacity, changes in land use designations, and infrastructure improvements to support future development of certain areas of Facility property. However, the Plant Master Plan would indirectly support growth by removing obstacles to growth, thereby enabling growth under the approved general plans within the Facility service area to occur, including potential future economic development projects within the Plant Master Plan area. The Plant Master Plan established for the Facility an extreme peak wet weather hydraulic capacity of 450 mgd. While Headworks 3 has moved to a different location than was proposed for headworks facilities in the Plant Master Plan, the Facility hydraulic capacity (which the Headworks 3 facilities are designed to support) has not increased.

Therefore, impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Significant and Unavoidable)**

b) The Project would involve construction and use of industrial facilities at an existing industrial site. The Project would not result in the demolition of existing housing, or otherwise cause a reduction in housing units on site or elsewhere. Therefore, the Project would have no impact with respect to this criterion, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (No Impact)**

References

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

3.15 Public Services

3.15.1 Setting

The nature of the Project with respect to Public Services has not changed in comparison to that described in the Plant Master Plan EIR. Fire protection services for the City are still provided by the San José Fire Department (SJFD). The closest fire station to the Facility is still Station 25 located at 5125 Wilson Way in Alviso, approximately one mile west of the Facility. Police services for the City of San José are still provided by the San José Police Department (SJPD).

3.15.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to public services:

- Less than significant impacts on public services related to construction and operation of Facility improvements.
- Potentially significant, but mitigable to less than significant, impacts related to effects on fire and police protection response times resulting from other proposed land use changes.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XV. PUBLIC SERVICES — Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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.i-v) The Plant Master Plan EIR concluded that the Facility improvements would not result in significant impacts on public services and facilities, because emergency access would be maintained during construction, and the number of jobs created by 2040 would have a negligible effect on response times. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and the Project does not propose road closures; therefore, construction

activities would not affect response times or performance outcomes. The Project would not create new jobs at the Facility, and therefore would not affect response times during operation. Therefore, impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

City of San José Fire Department, Available at http://www.sanjoseca.gov/index.aspx?NID=197. Accessed March 19, 2019.

3.16 Recreation

3.16.1 Setting

The nature of the Project with respect to use of existing recreational facilities or parks, or need for additional recreational facilities has not changed since adoption of the Plant Master Plan EIR. The nearest parks to the Project site are Vista Montaña Park and Cerano Park, located approximately one mile to the southwest and 1.6 miles to the southeast, respectively.

3.16.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to recreation:

- Less than significant impacts on use of existing recreational facilities resulting from construction and operation of Facility improvements.
- Potentially significant, but mitigable to less than significant, impacts related to increased use of park facilities resulting from other proposed land use changes.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XVI. RECREATION:					
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒	☐

Discussion

a, b) The Plant Master Plan EIR concluded that construction of the Facility improvements would not block public access to recreational facilities, and that the addition of 23 staff by 2040 would not result in substantial physical deterioration of recreational facilities. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and therefore construction activities would not block access to recreational facilities. The Project would not create new jobs at the Facility, and therefore would not affect demand for recreational facilities. Therefore, impacts would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

City of San José, 2019. Facilities. Available at http://www.sanjoseca.gov/Facilities?clear=False, last updated March 8, 2019.

3.17 Transportation

3.17.1 Setting

Setting information relevant to transportation and traffic for the Project remains the same as discussed in the Plant Master Plan EIR. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and roadway configuration in the vicinity has not changed since certification of the Plant Master Plan EIR.

Access to the Project site from the regional roadway network is limited to Zanker Road. As reported in the Plant Master Plan EIR, Zanker Road serves an average daily traffic (ADT) volume of approximately 3,600 vehicles north of the State Route (SR) 237 ramps. The most likely intersections that could be affected by an increase in traffic trips would be the Zanker Road/ SR 237 Westbound Ramps and Zanker Road/SR 237 Eastbound Ramps intersections. Both of these intersections are part of the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP).[27] According to the VTA's 2016 Annual Monitoring and Conformance Report, these two intersections operate at level of service (LOS) B+ during the PM peak hours.[28] The acceptable service levels for these intersections is LOS E or better (Santa Clara Valley Transportation Authority, 2016).

In general, SR 237 is fairly congested during both peak traffic periods and has limited capacity to accommodate additional growth in traffic. Northbound I-880 is the peak commute direction during the morning, and southbound is the peak commute direction during the evening. I-880 has slightly more capacity to accommodate additional growth in traffic, though it does have constraints in the peak directions of travel. Data published by Caltrans indicate that the annual ADT on I-880 is about 180,000 vehicles south of SR 237 and 225,000 vehicles north of SR 237 (California Department of Transportation, 2017).[29] CMP guidelines require that freeway segments to which a proposed development is projected to add trips equal to or greater than one percent of the freeway segment's capacity must be evaluated.

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27 As the Congestion Management Agency (CMA) for Santa Clara County and through its Congestion Management Program (CMP), the Santa Clara Valley Transportation Authority (VTA) has a statutory role to work with its Member Agencies (the 15 cities and towns in Santa Clara County, as well as the County of Santa Clara) on issues related to land use and transportation. As part of this role, VTA is working with its Member Agencies on the transition from Level of Service (LOS) to Vehicle Miles Traveled (VMT), in accordance with Senate Bill 743.

28 The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long delays). This LOS grading system applies to both roadway segments and intersections.

29 Annual average daily traffic is the total volume of vehicle traffic of a road for a year, divided by 365 days.

3.17.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to transportation:

- No impact related to air traffic patterns as the project would not introduce new air traffic or interfere with existing air traffic.
- Less than significant impacts for conflicts with applicable transportation and traffic plans, effects to levels of service at the Congestion Management Program (CMP) study intersections and freeways, increases in traffic-related hazard, and conflicts with adopted policies, plans, and programs supporting alternative transportation.
- Potentially significant, but mitigable to less than significant, impacts for effects to levels of service at the study intersections and freeways, reductions in roadway capacity, and emergency access.
- Significant and unavoidable impacts to established measures of effectiveness for travel mode share and travel speeds in transit corridors specific to the economic development portion of the Plant Master Plan.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XVII. TRANSPORTATION — Would the project:					
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☐	☒

Discussion

a) **Operation**

The operation and maintenance of the Project would fall within the current Facility procedures, and no additional staff would be required. Therefore, operation of the Project would not generate any new employee trips. The Plant Master Plan EIR projected that overall Facility operations would require an additional 28 round trips per week, and that a maximum of 8 project truck trips would be added by Facility improvements during the AM peak hour.[30] The Project would not change the projected capacity of the Headworks Facilities compared to the capacity evaluated in the Plant Master Plan EIR. At the projected capacity of the Headworks facilities, up to 8 additional round trips per week to haul screenings and grit would occur, lower than the number of additional trips evaluated

[30] Refer to Plant Master Plan EIR Table 4.3-9, Trip Generation Estimates for WPCP Improvements.

in the Plant Master Plan EIR. As described in Section 3.17.1, the affected intersections do not operate below LOS E, same as at the time of preparation of the Plant Master Plan EIR. Therefore, the Project would not result in any new or more significant impacts related to the circulation system as those identified in the previously approved Plant Master Plan EIR. **Same Impact than Approved Project. (Less than Significant)**

Construction

Excavation and grading would generate the largest number of truck and construction worker trips during construction, which would occur over a six-month period. During this phase, construction activities would generate a maximum of 48 truck trips per day (24 round trips) during excavation and grading for the pipelines. During this same period, a maximum of 160 vehicle trips per day (80 round trips) would be generated by construction workers traveling to and from the Project site; construction workers are assumed to commute to/from the Project site during the peak traffic hours, while truck trips would occur throughout the day. In general, the majority (95 percent) of Project trips are assumed to access the site via SR 237 (at the Zanker Road interchange), with the remaining five percent of the trips accessing the site via Zanker Road south of SR 237.

Intersections

The Project would add a maximum of 160 one-way worker vehicle trips per day (i.e., 80 commute trips during each of the AM and PM peak hours) during construction. The 48 one-way truck trips per day would be spread over the ten-hour (7:00 a.m. to 5:00 p.m.) work day. During the AM or PM peak hours, Project construction would add approximately 85 trips total, of which 81 would access the site via SR 237.

Under the Plant Master Plan EIR, it was determined that construction of the near-term plant improvements are anticipated to add a maximum of 160 new vehicle trips during both the AM and PM peak hours to the nearby roadways. It was determined that the addition of those trips would not substantially increase the critical delay or volume-to-capacity ratio at the two study intersections, and the intersections would continue to operate at acceptable service levels (LOS B at the time of Plant Master Plan certification). Since construction of the Project would add fewer peak hour vehicle trips (85) than the number evaluated under the Plant Master Plan EIR, the intersections would continue to operate at LOS B. Furthermore, as stated previously, traffic generated by Project construction is excluded from CMP conformance requirements.[31] Therefore, construction of the Project would not result in any new or more significant impacts as those identified in the previously approved Plant Master Plan EIR.

The Project site and its immediate environs are not directly served by transit, although a limited number of VTA bus routes operate in the area. The Great America Amtrak and Altamont Commuter Express station is located approximately two miles from the Project

[31] Legislation that created the Santa Clara VTA 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 from the Project would not conflict with the CMP and does not require LOS analysis.

site, but there is no transit connectivity between the Project site and the station. Existing transit service does not serve the Project area directly, and the Project would not conflict with any planned transit facilities nor would the Project prohibit access to such facilities.

The Project site currently has very limited pedestrian access, and no sidewalks are provided within the Project site. The Project would not affect any existing or planned pedestrian facilities nor would the Project conflict with any plans or policies associated with such facilities and users of such facilities.

The Project would not directly or indirectly eliminate alternative transportation corridors or facilities, nor would the Project include changes in adopted policies, plans, or programs that support alternative transportation. As a result, the Project would not conflict with adopted policies, plans, and programs that support alternative transportation, and would not result in any new or more significant impacts as those identified in the previously approved Plant Master Plan EIR. **Less Impact than Approved Project. (Less than Significant)**

Freeways

Because the Project site is at the northern border of San José and is generally bounded by SR 237 and I-880, a majority of the Project traffic would access the site via these two freeways. The SR 237 and I-880 segments immediately adjacent to the Project site could most likely be affected if there was an increase in traffic trips.

CMP guidelines require that freeway segments to which a proposed development is projected to add trips equal to or greater than one percent of the freeway segment's capacity must be evaluated. Under the Plant Master Plan EIR, it was determined that the near-term plant improvements are anticipated to add approximately one to 12 vehicles per hour per lane to the freeway segments, which results in adding less than one percent of capacity to any study freeway segments. As described above, Project construction would add approximately 80 commute trips during each of the AM and PM peak hours, and no more than five truck deliveries per hour over the ten-hour work day. Although Project construction would add more trips than those evaluated under the Plant Master Plan EIR, these trips would still add less than one percent of capacity to any study freeway segments. Furthermore, as stated previously, traffic generated by Project construction is excluded from CMP conformance requirements. Therefore, the Project would not result in any new or more significant impacts on study freeway segments as those identified in the previously approved Plant Master Plan EIR. **Same Impact than Approved Project. (Less than Significant)**

b) The Plant Master Plan EIR included an analysis of the potential changes (or burden) on city transportation systems in 2040 (the horizon year of the General Plan as well as the Plant Master Plan). The analysis was based on a projected transportation condition in the future year when the General Plan capacities for jobs and housing are fully developed. The analysis included an evaluation of the Plant Master Plan's impacts to vehicle miles traveled (VMT) per service population, vehicle hours traveled (VHT) per service population, travel

mode share, and vehicle speeds in the transit corridors. The assessment of the Plant Master Plan's contribution to citywide VMT (i.e., the difference in citywide VMT between the General Plan 2040 No Project and General Plan 2040 Plus Project conditions) indicates that the Plant Master Plan would not result in any increase in citywide VMT; therefore, the Plant Master Plan would have a less than significant impact on citywide VMT under General Plan 2040 plus Project conditions.

Section 15064.3 of the CEQA Guidelines suggests that the analysis of VMT impacts applies mainly to land use and transportation projects. Furthermore, consistent with the City's VMT analysis guidance as stated in Council Policy 5-1 (City of San José, 2018):

> "*...subsequent discretionary approval(s) required for a project approved prior to the Effective Date may continue to be analyzed under the prior environmental clearance and existing City Council Policy 5-3 after the Effective Date, provided that there is no Substantial Change to the project, as defined in California Public Resources Code Section 21166 and CEQA Guidelines Sections 15162-15164."*

Since the Plant Master Plan EIR was approved prior to the Effective Date of Council Policy 5-1 (March 2018), and the Project evaluated in this Addendum does not represent a substantial change to the project evaluated in the Plant Master Plan EIR, the City has determined that an analysis of VMT pursuant to requirements of Section 15064.3 of the CEQA Guidelines is not required for the Project. As such, the analysis is focused on the vehicle delay/LOS performance measure, which is the same performance measure used to evaluate transportation impacts in the Plant Master Plan EIR and is consistent with the City's guidance prior to implementation of Policy 5-1.

The impact would be the same as identified in the Plant Master Plan EIR (as described in Section 3.17.2), and the Project would not result in any new or more significant impacts during construction and operation compared to those identified in the certified Plant Master Plan EIR. **Less Impact than Approved Project. (No Impact)**

c) The Plant Master Plan EIR concluded that the operational area improvements would not alter roadway geometries or provide new roadway design features that would result in traffic safety hazards for vehicles, bicyclists, and pedestrians along nearby roadways. As discussed above, there is no existing transit service to the Project site, and there is limited bicycle and pedestrian activity in the vicinity of the Project site. Additionally, there are no sidewalks within the Project site vicinity, and there are no existing bicycle facilities that would be adversely affected by any Project-generated traffic. Overall, the Project would not alter roadway geometries or provide new roadway design features that would result in traffic safety hazards for vehicles, bicyclists, and pedestrians along nearby roadways. Based on these findings, the Project would not result in any new or more significant impacts to traffic safety hazards than those identified in the previously approved Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

d) The Plant Master Plan EIR concluded that Facility improvements that result in the relocation of the main access location for existing operations, or that include installation of pipelines within and across Zanker Road and require lane closure during construction, would have potentially significant impacts on emergency access during Plant Master Plan construction. While the Project has moved to a different location than was proposed in the Plant Master Plan, access would be maintained to the site for both emergency and general (public) vehicles during construction, and the Project would not relocate operations access or require closure of Zanker Road. Based on these findings, the Project would not result in any new or more significant impacts to emergency access than those identified in the previously approved Plant Master Plan EIR. **Less Impact than Approved Project. (Less than Significant)**

References

California Department of Transportation (Caltrans). 2017 Traffic Volumes on California State Highways, available at http://dot.ca.gov/trafficops/census/; accessed March 20, 2019.

Santa Clara Valley Transportation Authority, 2016. 2016 CMP Monitoring and Conformance Report, available at: http://vtaorgcontent.s3-us-west-1.amazonaws.com/Site_Content/Final %20MC%20Report%202016.pdf. accessed April 25, 2019.

3.18 Tribal Cultural Resources

3.18.1 Setting

Tribal cultural resources are: 1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing in the California Register of Historical Resources (California Register), or local register of historical resources, as defined in PRC Section 5020.1(k); or, 2) a resource determined by the CEQA lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). For a cultural landscape to be considered a tribal cultural resource, it must be geographically defined in terms of the size and scope of the landscape (PRC Section 21074[b]). Also, an historical resource, as defined in PRC Section 21084.1, unique archaeological resource, as defined in PRC Section 21083.2(g), or non-unique archaeological resource, as defined in PRC Section 21083.2(h), may also be a tribal cultural resource.

The City sent letters to the local tribes and individuals on July 26, 2017 regarding the Capital Improvement Program Operations and Maintenance Program Projects, which includes the Project. No responses have been received.

ESA completed a records search for the Project at the Northwest Information Center (NWIC) of the California Historical Resources Information System on August 1, 2011 (File No. 11-0118) and updated the search on May 11, 2016 (File No. 15-1655). There are no previously recorded prehistoric or historic-era archaeological resources in the Project area. In addition, no archaeological resources were identified in the Project site during the surface and subsurface surveys (see Section 3.5 Cultural Resources).

3.18.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR evaluated impacts to cultural resources significant to Native American tribes, however did not specifically discuss impacts to Tribal Cultural Resources as defined in Public Resources Code Section 21074(a)(1), as Assembly Bill (AB) 52 had not yet been adopted. AB 52, codified in the Public Resources Code (Sections 21074, 21080.3, 21082.3, 21083 *et seq*.), requires lead agencies to analyze the impacts of a project on "tribal cultural resources" separately from archaeological resources. AB 52 also requires lead agencies to engage in additional consultation with California Native American tribes, and requires the Office of Planning and Research to update Appendix G of the California Environmental Quality Act (CEQA) Guidelines to specifically address tribal cultural resources. AB 52's provisions only apply to projects that have a notice of preparation (NOP) filed on or after July 1, 2015.

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
XVIII. TRIBAL CULTURAL RESOURCES — Would the project:					
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐	☐

Discussion

a.i) No known tribal cultural resources listed or determined eligible for listing in the California Register, or included in a local register of historical resources as defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be affected by the Project.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts to the resource resulting from the Project could be potentially significant. Any such potential significant impacts would be reduced to a less than significant level by implementing **Mitigation Measures CUL-3a Inadvertent Discovery of Archaeological Resources** and **CUL-3c Inadvertent Discovery of Tribal Cultural Resources** (refer to Section 3.5 Cultural Resources). **New Less than Significant Impact with Mitigation.**

a.ii) The City did not determine any resource that could potentially be affected by the Project to be a significant tribal cultural resource pursuant to criteria set forth in PRC Section 5024.1(c). Therefore, the Project is not anticipated to impact any such resources.

However, if any previously unrecorded archaeological resource were identified during Project implementation, particularly ground-disturbing construction activities, and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(2) (determined by the lead agency to be significant pursuant to criteria set forth in PRC

Section 5024.1[c]), any impacts to the resource resulting from the Project could be potentially significant. Any such potential significant impacts would be reduced to a less than significant level by implementing **Mitigation Measures CUL-3a**. **Inadvertent Discovery of Archaeological Resources** and **CUL-3c. Inadvertent Discovery of Tribal Cultural Resources** (refer to Section 3.5 Cultural Resources). **New Less than Significant Impact with Mitigation.**

References

Archeo-Tec, 2018. *Phase I Cultural Resources Evaluation for the Digested Sludge Dewatering Facility Project, San José-Santa Clara Regional Wastewater Facility*, Prepared for Scheidegger & Associates, July 2018.

ESA, 2015. *San José-Santa Clara Regional Wastewater Facility Zanker Road Development Project Cultural Resources Survey Report*, Prepared for the City of San José, June 2015.

ESA, 2015. Cultural Resources Survey Report, San José-Santa Clara Regional Wastewater Facility Construction Enabling Project, Prepared for the City of San José, July 2015.

ESA, 2016. *Cultural Resources Survey Report (Combined Archaeological Survey Report and Historic Resources Evaluation Report), San José-Santa Clara Regional Wastewater Facility Capital Improvement Program*, Prepared for the City of San José, December 2016.

3.19 Utilities and Service Systems

3.19.1 Setting

Most elements of the environmental setting relevant to Utilities and Service Systems for the Project have not changed in comparison to the setting in the certified Plant Master Plan EIR. Solid waste generation rates and landfill capacity have changed, as summarized below.

Since certification of the Plant Master Plan EIR, the remaining capacity and relevant landfills have changed, as shown in **Table 3.19-1**. As of 2017, San José disposed of 714,719 tons of waste (or 3.8 pounds per person per day), well below the California Integrated Waste Management Act[32] target rate for San José of 5.2 pounds per person per day (CalRecycle, 2017).

TABLE 3.19-1
SUMMARY OF LANDFILLS

Landfill	Location	Estimated Closure Month/Year	Remaining Capacity (cubic yards)	Max Waste Accepted/Day[a]
Altamont Solid Waste Landfill (Class II, III)	10840 Altamont Pass Road, Livermore, CA	01/2025	65,400,000	11,150 cubic yards
Keller Canyon Landfill	901 Bailey Road, Pittsburg, CA	12/2030	52,930,000	3,270 tons

NOTE: NA = Not available

[a] Alternative daily cover does not count towards the maximum waste accepted per day.

SOURCE: CalRecycle, 2017. Solid Waste Information System (SWIS)–Facility/Site Listing for Altamont Solid Waste Landfill; SWT Engineering, 2016, *Joint Technical Document Keller Canyon Landfill (SWIS No. 07-AA-0032*), Volume 1. May.

3.19.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR discussed impacts of construction and operations of the Plant Master Plan, including projects affecting areas adjacent to the Project. The Plant Master Plan EIR identified the following impacts related to utilities and service systems:

- No impact related to: exceedance of wastewater treatment requirements of the applicable Regional Water Quality Control Board; the construction of new water or wastewater treatment facilities or new storm water drainage facilities, or expansion of existing facilities, which could cause significant environmental effects; and adequate capacity to serve the projected demand in addition to the wastewater treatment provider's existing commitments.
- Less than significant impacts for the construction of new or expansion of existing water treatment facilities, water supply availability to serve the project from existing entitlements and resources, sufficient permitted capacity to accommodate the solid waste disposal needs during construction and operation, and compliance with statutes and regulations related to solid waste.

[32] The California Integrated Waste Management Act of 1989 (AB 939) requires municipalities to divert at least 50 percent of all solid waste generated by the year 2000 and establishes the goal of diverting at least 75 percent of generated waste (based on per capita disposal rates) by 2020.

- Potentially significant, but mitigable to less than significant, impacts for disruption of regional or local utilities.
- Significant and unavoidable impacts related to the construction of new or expansion of existing water treatment facilities and water supply availability to serve the project from existing entitlements and resources specific to the economic development portion of the Plant Master Plan evaluated in the EIR.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XIX. UTILITIES AND SERVICE SYSTEMS — Would the project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒	☐

Discussion

a, c) This criterion applies to projects that, due to their nature, increase the need for water or wastewater treatment, storm water management, electric power, or other utility facilities. Construction and operation of wastewater treatment and stormwater drainage facilities were proposed as part of the Master Plan, and Plant Master Plan impacts associated with those facilities are summarized in Sections 3.1 through 3.18 and 3.20 through 3.21 of this document. The Project evaluated in this document is the replacement of existing and construction of new wastewater facilities. Refer to Sections 3.1 through 3.21 for a description of impacts and mitigation measures associated with construction of the Project.

The Plant Master Plan EIR concluded that the Facility improvements, including the preliminary treatment facilities, would not require expansion of the existing water treatment system because of the negligible increase in demand created by the anticipated 23 additional staff by 2040. Once operational, the Project would not require any additional workers; thus no new water treatment demand would be generated by the Project. The Project includes storm water drainage and electric power facilities, the impacts of which are described in Sections 3.1 through 3.21 of this document. While the Project includes utility

connections to existing facilities as described in Chapter 2, Project Description, there would be no expansion of utility service beyond the Facility. Project impacts would be the same as identified in the Plant Master Plan EIR and the Project would not result in any new or more significant impacts beyond those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

b) The Plant Master Plan EIR concluded that Facility improvements, including preliminary treatment facilities, would not require additional water supply beyond that already entitled because construction water use would be temporary and would likely include recycled water sources, and because the increase in potable water usage due to additional employees at the Facility during operation would be negligible.

While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and therefore similar sources of water would be available during construction and operation. The Project would not create new jobs at the Facility and would not install processes requiring potable water, and therefore would not affect potable water demand. For these reasons, construction and operation would not affect water supplies such that new or expanded entitlements would be required, and the Project would not result in any new or more significant impacts than those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

d) The Plant Master Plan EIR evaluated disposal of 1,515,922 cubic yards of soil and 167,102 cubic yards of demolition debris during Facility improvements construction. Approximately 42,190 cubic yards of this material was attributed to the preliminary treatment facilities (Headworks Odor Control and Influent Piping Demolition). The Plant Master Plan EIR concluded that sufficient capacity remains in local landfills through 2040 to handle the volume of waste material generated by Facility improvements. The Project would generate 51,270 cubic yards of soil and demolition debris during construction.

A minority of materials generated would be non-soil construction and demolition debris. This material would be managed in compliance with City's mandatory Construction and Demolition Diversion Deposit Program and any applicable recommendations of the Zero Waste Strategic Plan's Construction and Demolition Program in effect at the time of construction, which would substantially reduce impacts to Santa Clara County landfills. The majority of construction waste is expected to be soil from grading and excavation. As long as soils slated for off-site disposal are not contaminated with hazardous materials or have otherwise been screened appropriately for the proposed use, soils could be used onsite for backfill, be placed in the soil disposal area, or be used as landfill cover at the landfills listed in Table 3.19-1 and would not be considered waste. Soils not used onsite would be hauled by truck to a Class II or Class III landfill, depending on the chemical composition of the soil. Class II (hazardous) soils would be hauled to either Altamont or Keller Canyon landfills. Class III (non-hazardous) soils would be hauled to Altamont Landfill. However, assuming that no soil is placed in the Soil Disposal Area, the total volume of material generated by the Project would be within the total volume evaluated

in the Plant Master Plan EIR, and would not exceed the capacity of landfills designated by the City and listed in Table 3.19-1.

The Plant Master Plan EIR estimated the weight of biosolids generated by the Facility in 2040 to be 80 dry tons annually, and did not explicitly estimate changes in the amount of grit by 2040. The Plant Master Plan evaluated impacts to landfill capacity during Facility operations through 2044, and concluded that local landfills would have sufficient capacity for biosolids generated by the Facility at design capacity in 2040. The estimated weight of grit and screenings materials generated by the Project would be 4,880 tons per year. Grit and screenings materials are denser than biosolids; this weight is equivalent to annual volume of 2,185 cubic yards, much less than the annual amount of waste accepted at the City's designated landfills.[33] The Project would not affect Facility treatment capacity or the volume of solids flowing into the Facility (as the existing operating staff levels for the Facility would not change once the Project is operational).

For the reasons discussed above, the Project's impact on landfill capacity during construction and operations would not result in any new or more significant impacts than those disclosed in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

e) The Plant Master Plan EIR concluded that construction and operation of the Facility improvements, including preliminary treatment facilities, would comply with all applicable regulatory requirements related to solid waste. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project location is within the Plant Master Plan area and therefore the same solid waste regulations would apply. All disposal facilities identified by the City for disposal and recycling of construction and demolition debris are permitted for the types of waste generated by Project construction. Specifications for construction of the Project would contain requirements for the handling, storage, cleanup, and disposal of hazardous materials; including petroleum-based products, cement, or other construction pollutants. Refer to Section 3.9, Hazards and Hazardous Materials, for additional information on hazardous materials associated with construction of the Project and how hazardous materials would be handled if encountered during construction. The Project would comply with all applicable regulatory requirements related to solid waste, and thus would not result in any new or more significant impacts than those identified in the Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

CalRecycle, 2017. Jurisdiction Diversion/Disposal Rate Detail for San José, Reporting year 2015. Available at http://www.calrecycle.ca.gov/LGCentral/Reports/DiversionProgram/JurisdictionDiversionDetail.aspx?JurisdictionID=444&Year=2015. Accessed August 30, 2017. Accessed April 24, 2019.

[33] The density of grit is generally estimated as 2,650 kilograms per cubic meter, or 2.23 tons per cubic yard.

3.20 Wildfire

3.20.1 Setting

The environmental setting relevant to wildfires has not changed in comparison to that described in the certified Plant Master Plan EIR. Based upon fire hazard mapping by the CAL FIRE Forest Resource Assessment Program and the Santa Clara County Wildland Urban Fire Interface Map, the Project site is not located within an area identified as a high fire hazard area.

3.20.2 Findings of Previously Certified EIR

The certified Plant Master Plan EIR (Sections 4.11 and 4.12) evaluated impacts related to potential exposure to fires and emergency response or evacuation plans. The certified Plant Master Plan EIR identified less than significant impacts for potential hazards associated with exposure to fires.

Issues	*New Potentially Significant Impact*	*New Less Than Significant with Mitigation Incorporation*	*New Less Than Significant Impact*	*Same Impact as Approved Project*	*Less Impact than Approved Project*
XX. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐	☐

Discussion

a-d) The Plant Master Plan EIR concluded that the Plant Master Plan would not affect adopted emergency response or emergency evacuation plans because Santa Clara County had not adopted such a plan. Santa Clara County has adopted an emergency operations plan. As discussed in greater detail in Section 3.9, item f), construction and operation of the Project would not affect evacuation routes and therefore would have no impact on emergency response or evacuation plans.

Regarding fire hazards, the Plant Master Plan concluded that the Plant Master Plan area is not a high fire hazard area, and that compliance with hazardous materials storage, construction fire protection regulations, building codes, fire codes, and applicable

industry standards would ensure that the risk of hazards related to fire during construction and operation of all Facility improvements would not be significant. While the Project has moved to a different location than was proposed in the Plant Master Plan, the Project would still be located within the Plant Master Plan area, and is not located within an area identified as a high fire hazard area. Therefore, the Project would have no impact associated with wildfire. The Project would also be subject to the same fire hazard regulations during construction and operations as described in the Plant Master Plan EIR for all other Facility improvements. Through compliance with legal requirements related to hazardous materials storage and fire protection, potential risks of fire associated with construction and operation of the Project would not result in any new or more significant impacts compared to those identified in the certified Plant Master Plan EIR. **Same Impact as Approved Project. (Less than Significant)**

References

California Department of Forestry and Fire Protection (CAL FIRE), 2008. Fire and Resource Assessment Program, Fire Hazard Severity Zones in State Responsibility Areas, Santa Clara County, California. November 7, 2007.; California Department of Forestry and Fire Protection, Fire and Resource Assessment Program, Very Fire Hazard Severity Zones in Local Responsibility Areas, Santa Clara County, California. May 2008.

CAL FIRE, 2019. California Fire Hazard Severity Zone Map Update Project, http://egis.fire.ca.gov/FHSZ/, accessed April 5, 2019.

City of San José, 2013. San José/Santa Clara Regional Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

Santa Clara County Planning Office, Santa Clara County Wildland Urban Interface Fire Area, Adopted February 24, 2009.

3.21 Mandatory Findings of Significance

Issues	New Potentially Significant Impact	New Less Than Significant with Mitigation Incorporation	New Less Than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
XXI. MANDATORY FINDINGS OF SIGNIFICANCE —					
a) Does the project have the potential to substantially 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, substantially 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) Does the project 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) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒	☐

Discussion

a) The Project has the potential to degrade the quality of the environment. As discussed in the sections above, the Project would have the same impacts to aesthetics, air quality, biological resources, cultural resources, energy, greenhouse gas emissions, geology and soils, hazards and hazardous materials, hydrology and water quality, land use, noise, growth, public services, recreation, transportation, and utilities and service systems as the Project analyzed in the certified Plant Master Plan EIR.

The Project has the potential to impact biological resources. As discussed above in Section 3.4, Biological Resources, the Project could result in impacts to the following:

- Congdon's tarplant. Potential impacts to Congdon's tarplant from the Project would be reduced to less than significant with the implementation of the Plant Master Plan EIR Mitigation Measure BIO-1: Reduce Impacts to Tarplant.
- Similar construction activities as those described in the Plant Master Plan EIR would occur under the Project, especially those that involve ground disturbance and the use of heavy machinery for pipeline installation, facility construction, excavation, and stockpiling activities, which may affect nesting birds in the vicinity of the Project site. Implementation of the Plant Master Plan EIR Mitigation Measure BIO-2d: Raptor and Migratory Bird Nest Measures, would reduce adverse effects to common and special status nesting birds to less than significant. All other trees onsite or adjacent to the Project site would be safeguarded from construction activities by conditions identified in the City of San José's Municipal Code 13.32.130 – Safeguarding Trees During Construction and through implementation of the Plant

Master Plan EIR Mitigation Measure BIO-5b: Minimize Construction Effects on Protected Trees to be Retained.

- The addition of lighting associated with the construction and operation of new facilities may also result in adverse effects on breeding birds. Potential impacts from lighting would be reduced to less than significant with implementation of Mitigation Measure BIO-3: Minimize Light Pollution.
- Temporary noise, visual, and vibration impacts to potential nesting western burrowing owls adjacent to the Project sites could occur as a result of Project-related construction activities. Potential effects to western burrowing owls associated with the Project during the non-breeding season would be reduced to less than significant through the implementation of the Plant Master Plan EIR Mitigation Measure BIO-2e Western Burrowing Owl Measures.
- Temporary direct impacts to wetlands as a result of removal or fill would occur due to excavation for pipelines through a portion of the drainage feature north of the EBOS facility and east and west of Mike Tocce Lane Roadway Bridge. Impacts to wetlands would be reduced to less than significant through the implementation of Mitigation Measures BIO-4a Wetlands Avoidance Measures and BIO-4b Regulatory Approval and Wetlands Restoration.
- Potential sedimentation or contamination of stormwater runoff generated from the Project site could encroach into potential jurisdictional wetlands. Implementation of Plant Master Plan EIR Mitigation Measure BIO-4a Wetlands Avoidance Measures and Mitigation Measure BIO-4b Regulatory Approval and Wetlands Restoration, would reduce impacts to jurisdictional features.

With implementation of the above mitigation measures, Project impacts to special-status species would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts compared to those identified in the certified Plant Master Plan EIR.

As discussed above in Section 3.5, Cultural Resources, and Section 3.18 Tribal Cultural Resources, the Project would not substantially affect known historical resources or archaeological resources in the Project vicinity. Potential impacts to inadvertently discovered archaeological resources (including those found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1)) or human remains would be reduced to a less-than-significant level with implementation of Plant Master Plan EIR Mitigation Measures CUL-3a Inadvertent Discovery of Archaeological Resources, CUL-3c Inadvertent Discovery of Tribal Cultural Resources, and CUL-5 Inadvertent Discovery of Human Remains. No other cultural resources would be affected and the Project would not eliminate important examples of the major periods of California history or prehistory. With implementation of the above mitigation measures, Project impacts to cultural resources would be the same as identified in the Plant Master Plan EIR, and the Project would not result in any new or more significant impacts compared to those identified in the certified Plant Master Plan EIR.

b) Cumulative environmental effects are multiple individual effects that, when considered together are considerable or compound or increase other environmental impacts. The

individual effects may result from a single project or a number of separate projects and may occur at the same place and point in time or at different locations and over extended periods of time. Cumulative projects identified that are ongoing at present or anticipated in the reasonably foreseeable future that would be relevant to the Project include the proposed projects associated with implementation of the Plant Master Plan, as well as other anticipated upgrades at the Facility, including: Fire Life Safety Upgrades, Advanced Facility Control and Meter Replacement Phase 2, Switchgear M4 Replacement and G3 and G3A Removal, HVAC Improvements, Dewatering Facility, Blower Improvements, and Nitrification Clarifiers Rehab.

The certified Plant Master Plan EIR did not evaluate impacts to Tribal Cultural Resources, as Assembly Bill (AB) 52 had not yet been adopted, as discussed in Section 3.4, Tribal Cultural Resources. As a result, cumulatively considerable impacts for Tribal Cultural Resources were also not previously considered. The geographic scope for cumulative effects on tribal cultural resources includes the immediate vicinity of locations where the project could cause disturbance to known tribal cultural resources. As the Project would not have an impact on known tribal cultural resources there would be no significant cumulative impact on known tribal cultural resources to which the Project could contribute. Similar to the proposed Project, cumulative projects in the Project vicinity could have a significant impact on previously undiscovered archaeological resources, including human remains interred outside of formal cemeteries, during ground-disturbing activities that could be considered tribal cultural resources. However, implementation of Mitigation Measures Mitigation Measure CUL-3a Inadvertent Discovery of Archaeological Resources, Mitigation Measure CUL-3c Inadvertent Discovery of Tribal Cultural Resources, and Mitigation Measure CUL-5: Inadvertent Discovery of Human Remains would require that work halt in the vicinity of a find until it is evaluated by a Secretary of the Interior-qualified archaeologist, and in the case of human remains the County Coroner. In addition, cumulative projects undergoing CEQA review would have similar types of inadvertent discovery measures. Therefore, with implementation of Mitigation Measures CUL-3a, CUL-3c and CUL-5, the Project's contribution to cumulative impacts on tribal cultural resources would not be considerable.

As noted in Section 3.17, Transportation, and Chapter 2, Project Description, construction traffic generation and onsite activity would be limited. However, construction of the Project could overlap with construction of other projects at the Facility. Because the extent of construction of potentially overlapping projects is not fully known at this time, it is possible that service levels along affected roadways could be temporarily degraded. Therefore, implementation of Mitigation Measure C-TR (see below) as described in the approved Plant Master Plan EIR would reduce the Project's contribution to any potential traffic impacts to the surrounding network; and ensure that the Project would not result in any new or more significant traffic impacts compared to those identified in the certified Plant Master Plan EIR.

Mitigation Measure C-TR: Implement Coordinated Transportation Management Plan.

Prior to construction, the City's contractor(s) shall develop a Coordinated Transportation Management Plan and work with other projects' contractors and appropriate City departments (e.g., Emergency Services, Fire, Police, Transportation) to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the Project as well as planned Facility improvements and land uses, and to address the transportation impact of the overlapping construction projects within the vicinity of the Project. The transportation management plan shall include, but not be limited to, the following requirements:

- Coordination of individual traffic control plans for the Project with nearby projects.
- Coordination between the Project contractor and other project contractors in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address:
  - Full and partial roadways closures
  - Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices
  - Bicycle/Pedestrian detour plans, where applicable
  - Parking along public roadways
  - Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites
- Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.
- A comprehensive and continual outreach program to notify affected citizens (i.e. residents of Alviso, commuters, etc.) of all construction activity and roadway closures for the duration of the projects.

c) Impacts to air quality, water quality, and hazardous materials by the Project could directly affect human beings, and all impacts discussed above could indirectly affect human beings. However, implementation of the mitigation measures, General Plan policies, and conditions of approval; and compliance with applicable federal, state, and local regulations as discussed in the approved Plant Master Plan EIR and in this addendum would reduce these impacts to a less than significant level. This addendum has identified no other direct or indirect adverse effects on human beings.

References

City of San José, 2013. San José/Santa Clara Water Pollution Control Master Plan Environmental Impact Report; State Clearinghouse No. 2011052074; City of San José File Number PP11-403. November 19, 2013.

CHAPTER 4
Authors and Consultants

4.1 Lead Agency

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APPENDIX A

WPCP Schematic Flow Diagram

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HEADWORKS

The inlet control and overflow structures route sewage to Headworks 1 or Headworks 2, both of which are equipped with large bar screens to remove debris (e.g., rags, sticks, and rocks) that could clog machinery. After passing through the bar screens, flow enters the grit removal systems, which mechanically separate grit from water and organic matter. Grit and debris are trucked to a landfill.

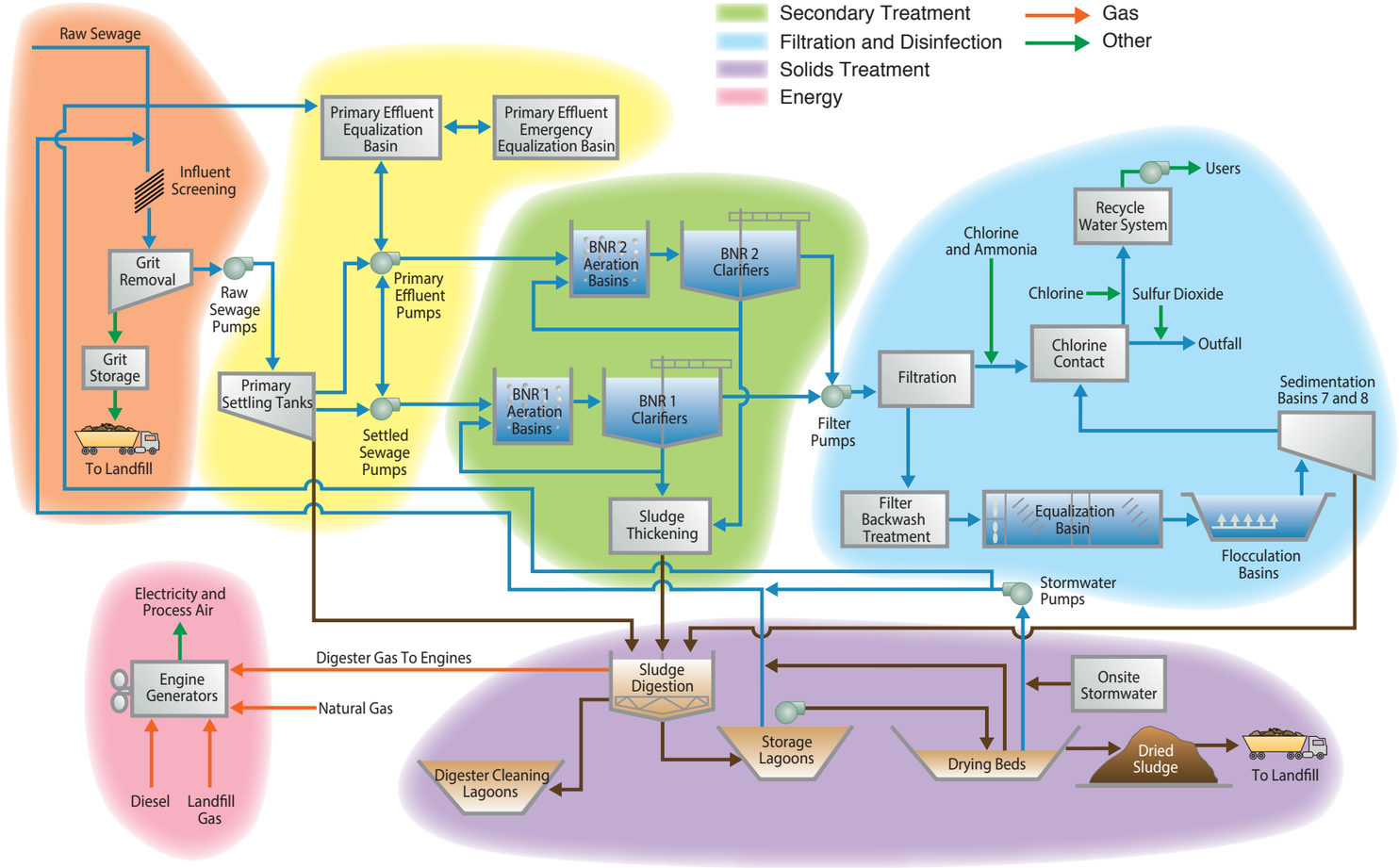
PRIMARY TREATMENT

Influent is pumped from the Headworks to settling tanks (referred to as the East and West Primaries) where larger particles (solids) are settled out of the wastewater over a 1.7-hour period, resulting in the removal of about 50 percent of contaminants. Within each tank, fiberglass bars called "flights" skim fats, oils and grease (scum) off the surface of the liquid and gradually rotate to the bottom of the tank. Settled solids are conveyed to the digesters. To reduce peak flows between primary and secondary treatment, plant operators pump primary effluent to the Primary Effluent Equalization Basin for temporary storage.

SECONDARY TREATMENT

Primary effluent is pumped to one of two biological nutrient removal (BNR) systems to remove biological oxygen demand, suspended solids, and some dissolved solids through a biological conversion of these materials into settlable forms. Each BNR system consists of aeration tanks and clarifiers:

- In the **aeration tanks**, air is pumped into the flow; the oxygen-rich environment nutures the growth of naturally occurring aerobic bacteria that remove organic pollutants in the water by attaching to suspended solids in the wastewater through flocculation.
- After aeration, the effluent is piped into **clarifiers** where the aerobic bacteria settle to the bottom. Vacuum-like rotating collectors withdraw the settled sludge, some of which is returned to the aeration tank to assist with treatment.



ENERGY

The WPCP uses digester gas (composed primarily of methane and carbon dioxide), landfill gas from nearby Newby Island Sanitary Landfill, and natural gas from Pacific Gas and Electric to meet the Plant's heat and power needs. The Plant's cogeneration system produces electricity and heat that is recovered and used for the digesters. Most of the energy consumed at the WPCP is for pumping and aeration (secondary treatment), which uses a combination of electric- and gas-driven blowers.

FILTRATION AND DISINFECTION

Filtration (or tertiary treatment) involves passing secondary effluent through filters containing layers of silica gravel, silica sand, and anthracite coal supported by an under-drain. The filters provide additional removal of biological oxygen demand and suspended solids.

Disinfection. Water treatment chemicals used in the disinfection process (chlorine and ammonia) are added to the filtered water, which drains into chlorine contact tanks beneath the filters. The chlorine contact tanks provide disinfection contact time between free chlorine (sodium hypochlorite) and water, and allows for additional removal of organics through sedimentation. Filtered disinfected water goes to the outfall at Artesian Slough or is diverted to the South Bay Water Recycling System.

Filter Backwash Treatment.The filters are periodically backwashed to flush out particles and prevent the filters from clogging. The filter backwash undergoes flocculation and sedimentation, whereby smaller particles combine into larger particles are settled out.

SOLIDS TREATMENT

Digestion. Solids are pumped to digester tanks (sludge from the BNR systems undergoes a thickening step first). The digesters use a biological process that relies on anerobic bactieria to reduce volatile solids (which are converted to digester gas) and kill pathogens. Each digester consists of a cover, gas mixing system and pumped heating loops, which transfer heat to the sludge to enhance the process.

Residual Solids Management. After 25 to 30 days digested sludge is pumped to clay-lined storage lagoons for further stabilization and capped with water for odor control. After 3 years settled solids are dredged, pumped into drying beds and actively dried for up to 6 months. The dried "biosolids" are trucked to the landfill for use as daily cover.

SOURCES: Carollo et al., 2009; ESA/J&S.

Figure 2-3
WPCP Schematic Flow Diagram

APPENDIX B

Air Quality and Greenhouse Gas Modeling

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CAP Emissions Summary - Headworks SO03

Construction Phase	Number of workdays	Average Daily Emissions (lb/day)			
		ROG	NOx	PM_{10}	$PM_{2.5}$
Construction Equipment	616	2.36	24.79	1.24	1.14
Construction Vehicle Trips		0.74	4.31	0.36	0.19
Total		**3.09**	**29.11**	**1.60**	**1.33**

GHG Emissions Summary - Headworks SO03

Source	GHG Emissions (tons)			
	CO_2	CH_4	N_2O	CO_2e
Construction Equipment	1091.00	0.00	0.00	1091.00
Construction Vehicle Trips	702.1	0.0	0.1	719.2
Water use for dust suppression	0.0	0.0	0.0	0.0
TOTAL	**1793**	**0.0**	**0.1**	**1810.2**

Construction Schedule

Construction Schedule				
	Start Date	End Date	Days/Week	Total Days
Project construction	02/25/20	07/05/22	5	616

Emissions from Construction Equipment

Construction Equipment	Number of units	Days Used	Daily Use (hours/day)	Horsepower (hp)	Total hp-hr	OFFROAD2017 Emission Factors (lb/hp-hr)				Total Emissions over Construction (lbs)				GHG Emission Factors (g/hp-hr)			Total GHG Emissions (tons)			
						ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
Excavators	2	360	6	330	1425600	1.51E-04	1.73E-03	5.26E-05	4.84E-05	215.28	2459.74	75.01	69.01	2.02E+02	2.36E-14	1.08E-14	287.58	0.00	0.00	287.58
Excavators	2	420	6	100	504000	2.49E-04	2.54E-03	1.52E-04	1.40E-04	125.34	1281.62	76.59	70.46	2.01E+02	1.77E-13	8.09E-14	101.15	0.00	0.00	101.15
Rubber Tired Dozers	2	225	6	125	337500	7.49E-04	5.87E-03	5.15E-04	4.74E-04	252.81	1981.89	173.98	160.06	2.11E+02	3.31E-11	1.51E-11	71.10	0.00	0.00	71.10
Graders	1	150	4	220	132000	3.10E-04	3.87E-03	1.28E-04	1.18E-04	40.86	510.94	16.95	15.59	2.16E+02	2.46E-14	1.12E-14	28.50	0.00	0.00	28.50
Tractors/Loaders/Backhoes	2	430	6	240	1238400	2.00E-04	1.97E-03	9.92E-05	9.13E-05	247.91	2438.35	122.85	113.03	1.93E+02	5.01E-14	2.29E-14	239.53	0.00	0.00	239.53
Rollers	2	330	6	100	396000	3.13E-04	3.15E-03	2.00E-04	1.84E-04	123.93	1245.67	79.23	72.89	1.98E+02	3.68E-13	1.68E-13	78.45	0.00	0.00	78.45
Crane	2	180	6	260	561600	2.38E-04	2.86E-03	1.17E-04	1.08E-04	133.82	1606.13	65.67	60.41	1.52E+02	2.38E-13	1.08E-13	85.38	0.00	0.00	85.38
Crane	1	500	6	365	1095000	2.38E-04	2.86E-03	1.17E-04	1.08E-04	260.92	3131.61	128.04	117.79	1.52E+02	2.38E-13	1.08E-13	166.47	0.00	0.00	166.47
Crane	1	120	6	300	216000	2.38E-04	2.86E-03	1.17E-04	1.08E-04	51.47	617.74	25.26	23.24	1.52E+02	2.38E-13	1.08E-13	32.84	0.00	0.00	32.84
Total Emissions over construction period										1452.35	15273.71	763.57	702.48				1091.00	0.00	0.00	1091.00
Average Daily Emissions (lbs/day)										2.36	24.79	1.24	1.14							

Emissions from Construction Vehicle Trips

Vehicle type	Average Number of workers/day	One Way Trips per Day	One Way Trip length (miles)	Daily Mileage (miles/day)	CAP Emission Factors (gms/mile)				CAP Daily Emissions (lbs/day)				GHG Emission Factors (gms/mile)			GHG Emissions (tons/day)			
					ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
Worker commute - LDA	53	105	16.8	1764	0.0133	0.0536	0.0464	0.0192	0.26	0.26	0.18	0.08	276.3588	0.0033	0.0055	0.49	0.00	0.00	0.50
Worker commute - LDT	18	35	16.8	588	0.0295	0.1237	0.0470	0.0198	0.19	0.18	0.06	0.03	320.2049	0.0066	0.0092	0.19	0.00	0.00	0.19
Vendor truck trips	--	4	6.6	26	0.5270	7.5435	0.2396	0.1712	0.04	0.47	0.01	0.01	1892.0458	0.0245	0.2974	0.06	0.00	0.00	0.06
Haul truck trips	--	10	20	200	0.5270	7.5435	0.2396	0.1712	0.25	3.40	0.11	0.08	1892.0458	0.0245	0.2974	0.40	0.00	0.00	0.42
Daily on-road vehicle trip emissions (lbs/day)									0.74	4.31	0.36	0.19				1.14	0.00	0.00	1.17
Total on-road vehicle trip emissions (tons/year)																702.10	0.02	0.06	719.16

GHG from water use for soil compaction and dust suppression during construction

Water use cycle process energy intensity[2]	4000	kWh/MG	
Daily water use		gallons	
Water used for project construction	0	MG	= daily gallons x workdays /1000000
Energy used for water	0	kWh/MG	

GHG emissions	CO_2	CH_4	N_2O
Emission Factor[2] (lb/MWh)	294	0.033	0.004
Energy used for water during construction (MWh)	0	0	0
Conversion from lbs to metric tons	0.000453592	0.000453592	0.000453592
GHG emissions (metric tons)	0	0	0
GWP[3]	1	25	298
GHG emissions as CO_2e (metric tons)	0	0	0
Total CO_2e emsions (metric tons)	**0**		

NOTES:

1. Source: https://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF, Table C-6

2. Source for GHG emission factors: https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016_summarytables.pdf, https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

3. Source for GWP: https://www.arb.ca.gov/cc/inventory/background/gwp.htm

Construction Data Needed for CalEEMod

Data Needed	CalEEMod default data
Will autopopulate, do not overwrite	Data Available

Project Information	
County	Santa Clara
Address	95134
Utility Company	Pacific Gas & Electric Company
Start Date of Construction	25-Feb-20
Operational Year	2022

Construction Schedule			
Construction Phase	From	To	Number of Workdays
Construction	2/25/2020	7/5/2022	616
			0
			0
			0
			0
			0
Total Number of Workdays			0

Construction Equipment and Activity by Phase						
Construction						
Available Construction Equipment in CalEEMod NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Hours	Notes
Excavators	2	6	360	330	4400	
Excavators	2	6	420	100	5000	
Rubber Tired Dozers	2	6	225	125	2700	Track Dozers
Graders	1	4	150	220	600	
Tractors/Loaders/Backhoes	2	6	430	240	5200	
Rollers	2	6	330	100	4000	
Crane	2	6	180	260	2200	RT
Crane	1	6	500	365	3000	Crawler
Crane	1	6	120	300	700	Crawler

Construction Vehicle Trips by Phase				
Construction Phase	Construction workers/day	One-way worker trips/day	One-way haul truck trips/day (Infill + Offhaul)	One-Way Construction Material delivery trips/day
Construction	70	140	10	4
0		0		
0		0		
0		0		
0		0		
0		0		

Worker trip length	16.8	miles
Vendor (material delivery) trip length	6.6	miles
Hauling trip length	20	miles

Ave. water use during construction		gallons/day

Construction Equipment

Aerial Lifts
Air Compressors
Bore/Drill Rigs
Cement and Mortar Mixers
Concrete/Industrial Saws
Crane
Crawler Tractors
Crushing/Proc. Equipment
Dumpers/Tenders
Excavators
Forklifts
Generator Sets
Forklifts
Generator Sets
Graders
Off-Highway Tractors
Off-Highway Trucks
Other Construction Equipment
Other General Industrial Equipment
Other Material Handling Equipment
Pavers
Paving Equipment

Plate Compactors
Pressure Washers
Pumps

Rollers
Rough Terrain Forklifts
Rubber Tired Dozers
Tractors/Loaders/Backhoes
Trenchers
Welders

Utility Companies

Statewide Average
Anaheim Public Utilities
Austin Energy
Burbank Water & Power
City and County of San Francisco
City of Palo Alto Public Utilities
City of Vernon
Glendale Water & Power
Imperial Irrigation District
Los Angeles Department of Water & Power
Martines Cogen Ltd. Partnership
Modesto Irrigation District
Martines Cogen Ltd. Partnership
Modesto Irrigation District
Pacific Gas & Electric Company
PacifiCorp
Pasadena Water & Power
Platte River Power Authority
Riverside Public Utilities
Roseville Electric
Sacramento Municipal Utility District
Salt River Project

San Diego Gas & Electric
Seattle City Light
Sierra Pacific Resources

Southern California Edison
Turlock Irrigation District

Project Energy Demand

Component	kWh/year
Process Power Demand	9238473
Electrical Building Lighting	40997
Electrical Building Ventilation	215654
Electrical Building Air Conditioning	96360
TOTAL	9591484

Component	Power Demand (MWhr/yr)	GHG Emission Factors[1] (lb/MWhr)			GHG Emissions (tons/year)			
		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e
Process Power Demand	9238.473	527.90	0.03	0.00	2438.49	0.15	0.02	2447.81
Electrical Building Lighting	40.997	527.90	0.03	0.00	10.82	0.00	0.00	10.86
Electrical Building Ventilation	215.654	527.90	0.03	0.00	56.92	0.00	0.00	57.14
Electrical Building Air Conditioning	96.36	527.90	0.03	0.00	25.43	0.00	0.00	25.53
Total	9591.484				**2532**	**0.16**	**0.02**	**2541**

1. GHG emission factors obtained from TCR for Electricity Generation for the eGRID subregion CAMX (WECC California). Available at https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN FRANCISCO BAY AREA
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_HOTSOAK
							miles/day	trips/day	g/mile	g/veh/day	g/trip	g/trip
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	Aggregated	GAS	2577631.179	94316967.3	12089668	0.013321179	0	0.312606458	0.123809421
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	Aggregated	DSL	27694.17971	1031080.81	129667.2	0.020182352	0	0	0
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	Aggregated	ELEC	61523.8282	2269026.39	304710.4	0	0	0	0.004888026
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	Aggregated	GAS	278984.9691	9591036.92	1281366	0.029500096	0	0.457188227	0.217555087
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	Aggregated	DSL	213.841649	3601.87471	714.2445	0.217765505	0	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	Aggregated	ELEC	1090.258205	39827.6456	5382.526	0	0	0	0.004888026
SAN FRANCISCO BAY AREA	2020	T7 single construction	Aggregated	Aggregated	DSL	1486.311449	104827.086	6719.556	0.527049061	1.57125735	0	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN FRANCISCO BAY AREA
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW,

Region	CalYr	VehClass	MdlYr	ROG_RUNLOSS g/trip	ROG_RESTLOSS g/veh/day	ROG_DIURN g/veh/day	CO_RUNEX g/mile	CO_IDLEX g/veh/day	CO_STREX g/trip	NOx_RUNEX g/mile
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0.251495165	0.214711174	0.237767222	0.760834107	0	2.521822936	0.053576977
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0	0	0.259510703	0	0	0.125859067
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0.004112885	0.015340304	0	0	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0.793708591	0.395686722	0.486252436	1.329462729	0	2.701635164	0.123652378
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0	0	1.293914917	0	0	1.246024042
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0.004053496	0.015130928	0	0	0	0
SAN FRANCISCO BAY AREA	2020	T7 single construction	Aggregated	0	0	0	1.2975974	19.3104945	0	7.543508089

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN FRANCISCO BAY AREA
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW,

Region	CalYr	VehClass	MdlYr	NOx_IDLEX g/veh/day	NOx_STREX g/trip	CO2_RUNEX g/mile	CO2_IDLEX g/veh/day	CO2_STREX g/trip	CH4_RUNEX g/mile	CH4_IDLEX g/veh/day	CH4_STREX g/trip
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0.234709575	276.358803	0	58.7629311	0.00328405	0	0.06607376
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0	219.5278975	0	0	0.00093743	0	0
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0	0	0	0	0	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0.310450508	320.2049229	0	68.4530456	0.00663682	0	0.08871839
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0	433.6962648	0	0	0.01011479	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0	0	0	0	0	0	0
SAN FRANCISCO BAY AREA	2020	T7 single construction	Aggregated	23.26477742	3.313673264	1892.045773	3866.10119	0	0.02448006	0.07298083	0

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN FRANCISCO BAY AREA
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW,

Region	CalYr	VehClass	MdlYr	PM10_RUNEX g/mile	PM10_IDLEX g/veh/day	PM10_STREX g/trip	PM10_PMTW g/mile	PM10_PMBW g/mile	PM2_5_RUNEX g/mile	PM2_5_IDLEX g/veh/day
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0.001605795	0	0.002100944	0.008000002	0.036750011	0.001476507	0
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0.010853303	0	0	0.008000002	0.036750011	0.010383794	0
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0	0	0.008000002	0.036750011	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0.002223676	0	0.002842462	0.008000002	0.036750011	0.002044752	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0.173406155	0	0	0.008000002	0.036750011	0.165904681	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0	0	0.008000002	0.036750011	0	0
SAN FRANCISCO BAY AREA	2020	T7 single construction	Aggregated	0.141891411	0.039487867	0	0.03600001	0.061740018	0.135753252	0.03777964

EMFAC2017 (v1.0.2) Emission Rates
Region Type: Air Basin
Region: SAN FRANCISCO BAY AREA
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW,

Region	CalYr	VehClass	MdlYr	PM2_5_STREX	PM2_5_PMTW	PM2_5_PMBW	N2O_RUNEX	N2O_IDLEX	N2O_STREX
				g/trip	g/mile	g/mile	g/mile	g/veh/day	g/trip
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0.001931902	0.002000001	0.015750005	0.00545619	0	0.02921201
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0.002000001	0.015750005	0.03450673	0	0
SAN FRANCISCO BAY AREA	2020	LDA	Aggregated	0	0.002000001	0.015750005	0	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0.002613857	0.002000001	0.015750005	0.00915308	0	0.03214984
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0.002000001	0.015750005	0.06817101	0	0
SAN FRANCISCO BAY AREA	2020	LDT1	Aggregated	0	0.002000001	0.015750005	0	0	0
SAN FRANCISCO BAY AREA	2020	T7 single construction	Aggregated	0	0.009000003	0.026460008	0.29740325	0.60769727	0

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2020
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity: hours/year, HP-Hours: HP-hours/year

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	50	Diesel	0.000182051	0.001181453	0.152291
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	75	Diesel	0.000142997	0.002099101	0.265301
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	100	Diesel	0.000302586	0.003471621	0.681794
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	175	Diesel	0.00036352	0.00389144	1.10104
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	300	Diesel	0.000430432	0.005454972	1.554825
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	600	Diesel	0.000656635	0.007504449	2.974786
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	750	Diesel	0.000235184	0.002591987	1.122769
San Francis	2020	ConstMin - Bore/Drill Rigs	Aggregated	9999	Diesel	0.000282131	0.006272925	0.823357
San Francis	2020	ConstMin - Cranes	Aggregated	25	Diesel	5.47075E-06	2.34414E-05	0.002912
San Francis	2020	ConstMin - Cranes	Aggregated	50	Diesel	0.000174719	0.000494138	0.04719
San Francis	2020	ConstMin - Cranes	Aggregated	75	Diesel	5.27794E-05	0.000398719	0.021216
San Francis	2020	ConstMin - Cranes	Aggregated	100	Diesel	0.001533141	0.013440798	1.095214
San Francis	2020	ConstMin - Cranes	Aggregated	175	Diesel	0.003269447	0.033773652	3.233744
San Francis	2020	ConstMin - Cranes	Aggregated	300	Diesel	0.004140806	0.049697837	5.824238
San Francis	2020	ConstMin - Cranes	Aggregated	600	Diesel	0.005480514	0.066655759	9.670084
San Francis	2020	ConstMin - Cranes	Aggregated	750	Diesel	0.000187804	0.002001435	0.154917
San Francis	2020	ConstMin - Cranes	Aggregated	9999	Diesel	0.000785547	0.008985756	0.542282
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	50	Diesel	0.000543387	0.001493637	0.152684
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	75	Diesel	0.000186191	0.001474527	0.050397
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	100	Diesel	0.00884453	0.074461902	6.698646
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	175	Diesel	0.006679212	0.068268163	7.360018
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	300	Diesel	0.006209762	0.077057911	7.867823
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	600	Diesel	0.013462591	0.162954177	26.63125
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	750	Diesel	0.000408324	0.006475876	0.572186

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2020
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Bore/Drill Rigs	0	0	0	0	0
San Francis	2020	ConstMin - Bore/Drill Rigs	7.48039E-05	6.882E-05	4940.919	4276.895687	12.30394411
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000110352	0.00010152	8607.405	4565.537389	10.36121609
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000176757	0.00016262	22120.06	10092.34699	27.19819225
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000172427	0.00015863	35722.03	9167.768968	29.65898107
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000158516	0.00014583	50444.57	9453.810294	29.65898107
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000236377	0.00021747	96513.66	8953.671369	25.64400983
San Francis	2020	ConstMin - Bore/Drill Rigs	9.07734E-05	8.3511E-05	36427	2148.488183	4.921577645
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000152269	0.00014009	26712.91	553.4466265	0.777091207
San Francis	2020	ConstMin - Cranes	1.75905E-06	1.6183E-06	94.48879	228.2471216	0.487981182
San Francis	2020	ConstMin - Cranes	5.21832E-05	4.8009E-05	1531.043	2220.238496	5.205132612
San Francis	2020	ConstMin - Cranes	3.70102E-05	3.4049E-05	688.3313	655.1672148	1.789264335
San Francis	2020	ConstMin - Cranes	0.000947862	0.00087203	35533.01	27106.79509	62.78691214
San Francis	2020	ConstMin - Cranes	0.001815226	0.00167001	104915.3	47873.83586	107.0305393
San Francis	2020	ConstMin - Cranes	0.002031929	0.00186937	188961	57053.97864	123.1339184
San Francis	2020	ConstMin - Cranes	0.002626936	0.00241678	313735.2	57000.27343	118.4167669
San Francis	2020	ConstMin - Cranes	0.000103196	9.4941E-05	5026.119	525.0772416	1.301283153
San Francis	2020	ConstMin - Cranes	0.000428772	0.00039447	17593.75	1259.350772	2.602566306
San Francis	2020	ConstMin - Crawler Tractors	0	0	0	0	0
San Francis	2020	ConstMin - Crawler Tractors	0.000156482	0.00014396	4953.662	4810.282649	14.43655093
San Francis	2020	ConstMin - Crawler Tractors	0.00010811	9.9461E-05	1635.06	1012.23342	4.908427316
San Francis	2020	ConstMin - Crawler Tractors	0.006219263	0.00572172	217330.2	111712.9852	242.6784211
San Francis	2020	ConstMin - Crawler Tractors	0.003819094	0.00351357	238787.7	72219.29578	163.4217565
San Francis	2020	ConstMin - Crawler Tractors	0.003092129	0.00284476	255262.8	55679.11828	130.0733239
San Francis	2020	ConstMin - Crawler Tractors	0.006125024	0.00563502	864021.6	101154.4213	215.8264364
San Francis	2020	ConstMin - Crawler Tractors	0.000189742	0.00017456	18563.93	1351.523242	3.031675695

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2020
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity

						Emission Factor	
Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Bore/Drill Rigs	0	0	0	0	0
San Francis	2020	ConstMin - Bore/Drill Rigs	167783.3298	459.6804	0.000792	0.00514	0.662596
San Francis	2020	ConstMin - Bore/Drill Rigs	335204.5138	918.3685	0.000311	0.004571	0.577766
San Francis	2020	ConstMin - Bore/Drill Rigs	864736.3284	2369.141	0.000255	0.002931	0.575562
San Francis	2020	ConstMin - Bore/Drill Rigs	1370547.62	3754.925	0.000194	0.002073	0.586451
San Francis	2020	ConstMin - Bore/Drill Rigs	1954428.942	5354.6	0.000161	0.002037	0.580744
San Francis	2020	ConstMin - Bore/Drill Rigs	3750346.05	10274.92	0.000128	0.001461	0.579038
San Francis	2020	ConstMin - Bore/Drill Rigs	1387933.758	3802.558	0.000124	0.001363	0.590533
San Francis	2020	ConstMin - Bore/Drill Rigs	1029628.146	2820.899	0.0002	0.004447	0.583755
San Francis	2020	ConstMin - Cranes	5706.178041	15.63336	0.0007	0.002999	0.372585
San Francis	2020	ConstMin - Cranes	91541.68327	250.7991	0.001393	0.003941	0.376321
San Francis	2020	ConstMin - Cranes	45880.03012	125.6987	0.00084	0.006344	0.33757
San Francis	2020	ConstMin - Cranes	2392952.276	6556.034	0.000468	0.0041	0.334109
San Francis	2020	ConstMin - Cranes	7032434.636	19266.94	0.000339	0.003506	0.335678
San Francis	2020	ConstMin - Cranes	12685466.14	34754.7	0.000238	0.00286	0.335163
San Francis	2020	ConstMin - Cranes	21099051.98	57805.62	0.00019	0.002306	0.334572
San Francis	2020	ConstMin - Cranes	336089.8043	920.794	0.000408	0.004347	0.336486
San Francis	2020	ConstMin - Cranes	1181582.914	3237.213	0.000485	0.005552	0.33503
San Francis	2020	ConstMin - Crawler Tractors	0	0	0	0	0
San Francis	2020	ConstMin - Crawler Tractors	202158.8229	553.8598	0.001962	0.005394	0.551345
San Francis	2020	ConstMin - Crawler Tractors	73091.71698	200.2513	0.00186	0.014727	0.503333
San Francis	2020	ConstMin - Crawler Tractors	9777564.471	26787.85	0.00066	0.005559	0.500126
San Francis	2020	ConstMin - Crawler Tractors	10767172.36	29499.1	0.000453	0.004628	0.498999
San Francis	2020	ConstMin - Crawler Tractors	11515844.83	31550.26	0.000394	0.004885	0.498749
San Francis	2020	ConstMin - Crawler Tractors	38935202.2	106671.8	0.000252	0.003055	0.499312
San Francis	2020	ConstMin - Crawler Tractors	838792.2854	2298.061	0.000355	0.005636	0.497973

OFFROAD2017 (v1.0.1) Emissions Inventory
Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2020
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2017 Equipment Types
Units: Emissions: tons/day, Fuel Consumption: gallons/year, Activity

					g/gallon	gal/yr		
						g/yr		hphr/yr
								g/hp-hr
					0.57	0.26		
			s (lb/hp-hr)		Emission Factors (g/hphr)			
Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O		
San Francis	2020	ConstMin - Bore/Drill Rigs	0	0	0	0		
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000325461	0.000299424	6.8757E-10	3.13629E-10		
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000240322	0.000221096	1.9756E-10	9.01138E-11		
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000149216	0.000137279	2.9799E-11	1.35926E-11		
San Francis	2020	ConstMin - Bore/Drill Rigs	9.18403E-05	8.44931E-05	1.1642E-11	5.31059E-12		
San Francis	2020	ConstMin - Bore/Drill Rigs	5.92075E-05	5.44709E-05	5.7815E-12	2.63718E-12		
San Francis	2020	ConstMin - Bore/Drill Rigs	4.60105E-05	4.23297E-05	1.5748E-12	7.18312E-13		
San Francis	2020	ConstMin - Bore/Drill Rigs	4.77433E-05	4.39238E-05	1.1274E-11	5.14258E-12		
San Francis	2020	ConstMin - Bore/Drill Rigs	0.000107957	9.93209E-05	2.0724E-11	9.45305E-12		
San Francis	2020	ConstMin - Cranes	0.000225038	0.000207035	1.0572E-06	4.82223E-07		
San Francis	2020	ConstMin - Cranes	0.000416135	0.000382844	4.0669E-09	1.8551E-09		
San Francis	2020	ConstMin - Cranes	0.000588872	0.000541762	1.8049E-08	8.23289E-09		
San Francis	2020	ConstMin - Cranes	0.000289157	0.000266025	6.7036E-12	3.05779E-12		
San Francis	2020	ConstMin - Cranes	0.000188429	0.000173355	7.7256E-13	3.52394E-13		
San Francis	2020	ConstMin - Cranes	0.00011693	0.000107575	2.3779E-13	1.08466E-13		
San Francis	2020	ConstMin - Cranes	9.08886E-05	8.36175E-05	8.6109E-14	3.92778E-14		
San Francis	2020	ConstMin - Cranes	0.000224146	0.000206215	3.3743E-10	1.53917E-10		
San Francis	2020	ConstMin - Cranes	0.000264902	0.00024371	2.7419E-11	1.25069E-11		
San Francis	2020	ConstMin - Crawler Tractors	0	0	0			
San Francis	2020	ConstMin - Crawler Tractors	0.000565059	0.000519854	5.6919E-10	2.5963E-10		
San Francis	2020	ConstMin - Crawler Tractors	0.001079739	0.00099336	4.7695E-09	2.17556E-09		
San Francis	2020	ConstMin - Crawler Tractors	0.000464335	0.000427188	2.6824E-13	1.22355E-13		
San Francis	2020	ConstMin - Crawler Tractors	0.00025893	0.000238215	2.217E-13	1.01125E-13		
San Francis	2020	ConstMin - Crawler Tractors	0.000196013	0.000180332	1.9391E-13	8.84484E-14		
San Francis	2020	ConstMin - Crawler Tractors	0.000114839	0.000105652	1.6944E-14	7.7287E-15		
San Francis	2020	ConstMin - Crawler Tractors	0.000165132	0.000151922	3.6606E-11	1.66974E-11		

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Crawler Tractors	Aggregated	9999	Diesel	0.001249807	0.020248377	1.568628
San Francis	2020	ConstMin - Excavators	Aggregated	25	Diesel	5.11046E-06	9.7479E-06	0.000755
San Francis	2020	ConstMin - Excavators	Aggregated	50	Diesel	0.006164153	0.041915323	6.110803
San Francis	2020	ConstMin - Excavators	Aggregated	75	Diesel	0.000131935	0.001949497	0.192977
San Francis	2020	ConstMin - Excavators	Aggregated	100	Diesel	0.00435433	0.044523838	7.746848
San Francis	2020	ConstMin - Excavators	Aggregated	175	Diesel	0.007385402	0.07261592	16.7427
San Francis	2020	ConstMin - Excavators	Aggregated	300	Diesel	0.007230163	0.082610357	21.2933
San Francis	2020	ConstMin - Excavators	Aggregated	600	Diesel	0.010896217	0.111130803	37.75282
San Francis	2020	ConstMin - Excavators	Aggregated	750	Diesel	0.000332251	0.004223254	0.669637
San Francis	2020	ConstMin - Excavators	Aggregated	9999	Diesel	0.000313542	0.00654408	1.055234
San Francis	2020	ConstMin - Graders	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Graders	Aggregated	50	Diesel	0.000175738	0.000405203	0.038003
San Francis	2020	ConstMin - Graders	Aggregated	75	Diesel	7.67206E-05	0.0005889	0.062631
San Francis	2020	ConstMin - Graders	Aggregated	100	Diesel	0.001837771	0.014281705	0.843747
San Francis	2020	ConstMin - Graders	Aggregated	175	Diesel	0.010756906	0.104999156	10.22425
San Francis	2020	ConstMin - Graders	Aggregated	300	Diesel	0.014040943	0.175567221	21.58703
San Francis	2020	ConstMin - Graders	Aggregated	600	Diesel	0.000609581	0.008063686	0.941483
San Francis	2020	ConstMin - Graders	Aggregated	9999	Diesel	0.000689631	0.009544257	0.73183
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	50	Diesel	0.004373761	0.020167185	2.534255
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	75	Diesel	0.001106275	0.010606855	1.740712
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	100	Diesel	0.001612585	0.01478434	1.47852
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	175	Diesel	0.001410253	0.015041144	2.752837
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	300	Diesel	0.00112981	0.013537264	2.462452
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	600	Diesel	0.002290478	0.022462394	7.532762
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	750	Diesel	0.000197554	0.001968855	0.438597
San Francis	2020	ConstMin - Off-Highway Tractors	Aggregated	9999	Diesel	0.000192741	0.00290424	0.428148
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	25	Diesel	3.99664E-05	9.83007E-05	0.01075
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	50	Diesel	0.000323217	0.001877232	0.232926
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	75	Diesel	4.20522E-05	0.000319326	0.073369
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	100	Diesel	0.000151926	0.001291054	0.169874
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	175	Diesel	0.003465706	0.029357006	5.798068
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	300	Diesel	0.006171045	0.056309665	11.81129
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	600	Diesel	0.023690074	0.227261642	50.67965

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Crawler Tractors	0.000574115	0.00052819	50892.42	2341.051458	4.330965279
San Francis	2020	ConstMin - Excavators	1.35857E-06	1.2499E-06	24.4995	44.69445277	0.144654186
San Francis	2020	ConstMin - Excavators	0.002309146	0.00212441	198258.3	252271.6266	353.2455233
San Francis	2020	ConstMin - Excavators	0.000112774	0.00010375	6260.914	4312.772664	6.364784203
San Francis	2020	ConstMin - Excavators	0.002660809	0.00244794	251337.9	156565.6362	248.0819297
San Francis	2020	ConstMin - Excavators	0.003529349	0.003247	543198.3	188237.5453	325.905882
San Francis	2020	ConstMin - Excavators	0.002519134	0.0023176	690837.7	160024.535	280.3398133
San Francis	2020	ConstMin - Excavators	0.003658134	0.00336548	1224849	184008.6756	294.081961
San Francis	2020	ConstMin - Excavators	0.000138442	0.00012737	21725.63	1759.218839	3.182392101
San Francis	2020	ConstMin - Excavators	0.000122698	0.00011288	34235.91	1438.128727	2.169812796
San Francis	2020	ConstMin - Graders	0	0	0	0	0
San Francis	2020	ConstMin - Graders	4.97902E-05	4.5807E-05	1232.957	1449.395362	4.215538693
San Francis	2020	ConstMin - Graders	4.16541E-05	3.8322E-05	2031.988	1337.841049	3.63408508
San Francis	2020	ConstMin - Graders	0.001180483	0.00108604	27374.45	14550.21721	40.41102609
San Francis	2020	ConstMin - Graders	0.005861273	0.00539237	331714.4	105426.9335	228.6566332
San Francis	2020	ConstMin - Graders	0.005822734	0.00535692	700367.5	152766.0118	205.8345789
San Francis	2020	ConstMin - Graders	0.000249529	0.00022957	30545.37	4098.486024	5.669172725
San Francis	2020	ConstMin - Graders	0.000299289	0.00027535	23743.41	620.6830123	0.872180419
San Francis	2020	ConstMin - Off-Highway Tractors	0	0	0	0	0
San Francis	2020	ConstMin - Off-Highway Tractors	0.001502165	0.00138199	82221.11	87167.97522	135.4496712
San Francis	2020	ConstMin - Off-Highway Tractors	0.000639193	0.00058806	56475.49	35352.09432	56.23516379
San Francis	2020	ConstMin - Off-Highway Tractors	0.001224328	0.00112638	47968.95	26621.8122	42.24773726
San Francis	2020	ConstMin - Off-Highway Tractors	0.000729727	0.00067135	89312.76	25051.42172	37.39495663
San Francis	2020	ConstMin - Off-Highway Tractors	0.000458537	0.00042185	79891.54	16379.56755	26.11937811
San Francis	2020	ConstMin - Off-Highway Tractors	0.000760038	0.00069923	244392.2	30439.05192	44.95958526
San Francis	2020	ConstMin - Off-Highway Tractors	7.991E-05	7.3517E-05	14229.8	1003.30503	1.427288421
San Francis	2020	ConstMin - Off-Highway Tractors	7.64352E-05	7.032E-05	13890.79	377.4732189	0.713644211
San Francis	2020	ConstMin - Off-Highway Trucks	1.01604E-05	9.3476E-06	348.7626	635.5394416	0.424251755
San Francis	2020	ConstMin - Off-Highway Trucks	0.00013061	0.00012016	7557.019	12028.2425	7.636531587
San Francis	2020	ConstMin - Off-Highway Trucks	1.28714E-05	1.1842E-05	2380.381	1696.191515	1.131338013
San Francis	2020	ConstMin - Off-Highway Trucks	0.000104197	9.5861E-05	5511.382	3173.280453	2.545510529
San Francis	2020	ConstMin - Off-Highway Trucks	0.001538596	0.00141551	188111.9	60474.67749	44.1221825
San Francis	2020	ConstMin - Off-Highway Trucks	0.002193932	0.00201842	383204.1	92346.76753	74.10263984
San Francis	2020	ConstMin - Off-Highway Trucks	0.008297274	0.00763349	1644246	221355.5955	166.5895224

Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Crawler Tractors	2290138.446	6274.352	0.000398	0.006454	0.500013
San Francis	2020	ConstMin - Excavators	1117.361319	3.061264	0.003339	0.006369	0.493348
San Francis	2020	ConstMin - Excavators	9022739.493	24719.83	0.000499	0.003391	0.494405
San Francis	2020	ConstMin - Excavators	316498.703	867.1197	0.000304	0.004496	0.445098
San Francis	2020	ConstMin - Excavators	12781627.4	35018.16	0.000249	0.002543	0.442447
San Francis	2020	ConstMin - Excavators	27484116.39	75298.95	0.000196	0.001929	0.444699
San Francis	2020	ConstMin - Excavators	34951524.5	95757.6	0.000151	0.001725	0.444733
San Francis	2020	ConstMin - Excavators	62137917.56	170240.9	0.000128	0.001306	0.443522
San Francis	2020	ConstMin - Excavators	1102055.077	3019.329	0.00022	0.002797	0.443567
San Francis	2020	ConstMin - Excavators	1731319.981	4743.342	0.000132	0.002759	0.444933
San Francis	2020	ConstMin - Graders	0	0	0	0	0
San Francis	2020	ConstMin - Graders	52473.92764	143.7642	0.002445	0.005637	0.528681
San Francis	2020	ConstMin - Graders	96129.33545	263.368	0.000583	0.004472	0.475614
San Francis	2020	ConstMin - Graders	1307015.273	3580.864	0.001026	0.007977	0.471253
San Francis	2020	ConstMin - Graders	15669071.89	42928.96	0.000501	0.004892	0.476333
San Francis	2020	ConstMin - Graders	33110704	90714.26	0.00031	0.003871	0.475935
San Francis	2020	ConstMin - Graders	1437769.284	3939.094	0.00031	0.004094	0.47802
San Francis	2020	ConstMin - Graders	1123015.329	3076.754	0.000448	0.006204	0.475715
San Francis	2020	ConstMin - Off-Highway Tractors	0	0	0	0	0
San Francis	2020	ConstMin - Off-Highway Tractors	3288820.981	9010.468	0.000971	0.004476	0.562513
San Francis	2020	ConstMin - Off-Highway Tractors	2506913.124	6868.255	0.000322	0.003089	0.506886
San Francis	2020	ConstMin - Off-Highway Tractors	2121844.933	5813.274	0.000555	0.005086	0.50867
San Francis	2020	ConstMin - Off-Highway Tractors	3966426.566	10866.92	0.00026	0.002768	0.506645
San Francis	2020	ConstMin - Off-Highway Tractors	3554266.026	9737.715	0.000232	0.00278	0.505756
San Francis	2020	ConstMin - Off-Highway Tractors	10880982.7	29810.91	0.000154	0.001507	0.505369
San Francis	2020	ConstMin - Off-Highway Tractors	639742.2907	1752.719	0.000225	0.002247	0.500476
San Francis	2020	ConstMin - Off-Highway Tractors	616999.9565	1690.411	0.000228	0.003436	0.506561
San Francis	2020	ConstMin - Off-Highway Trucks	15888.48604	43.5301	0.001836	0.004516	0.493898
San Francis	2020	ConstMin - Off-Highway Trucks	346224.5085	948.5603	0.000681	0.003958	0.491114
San Francis	2020	ConstMin - Off-Highway Trucks	120657.8755	330.5695	0.000254	0.001932	0.443895
San Francis	2020	ConstMin - Off-Highway Trucks	279316.8241	765.2516	0.000397	0.003374	0.44397
San Francis	2020	ConstMin - Off-Highway Trucks	9540499.464	26138.35	0.000265	0.002246	0.443644
San Francis	2020	ConstMin - Off-Highway Trucks	19494404.23	53409.33	0.000231	0.002109	0.442293
San Francis	2020	ConstMin - Off-Highway Trucks	83320593.95	228275.6	0.000208	0.001991	0.444022

Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O
San Francis	2020	ConstMin - Crawler Tractors	0.000183004	0.000168363	4.8906E-12	2.23079E-12
San Francis	2020	ConstMin - Excavators	0.000887585	0.000816578	2.0822E-05	9.49779E-06
San Francis	2020	ConstMin - Excavators	0.000186825	0.000171879	3.1864E-13	1.45346E-13
San Francis	2020	ConstMin - Excavators	0.000260112	0.000239303	2.8765E-10	1.31209E-10
San Francis	2020	ConstMin - Excavators	0.000151967	0.00013981	1.7743E-13	8.09337E-14
San Francis	2020	ConstMin - Excavators	9.37423E-05	8.62429E-05	3.818E-14	1.74154E-14
San Francis	2020	ConstMin - Excavators	5.26148E-05	4.84056E-05	2.3607E-14	1.07679E-14
San Francis	2020	ConstMin - Excavators	4.2976E-05	3.95379E-05	7.4892E-15	3.41613E-15
San Francis	2020	ConstMin - Excavators	9.17038E-05	8.43675E-05	2.3807E-11	1.08592E-11
San Francis	2020	ConstMin - Excavators	5.17349E-05	4.75961E-05	9.6165E-12	4.38646E-12
San Francis	2020	ConstMin - Graders	0	0	0	0
San Francis	2020	ConstMin - Graders	0.000692665	0.000637252	8.8102E-09	4.01867E-09
San Francis	2020	ConstMin - Graders	0.000316318	0.000291013	2.9181E-09	1.33106E-09
San Francis	2020	ConstMin - Graders	0.000659329	0.000606582	1.5931E-11	7.26687E-12
San Francis	2020	ConstMin - Graders	0.000273068	0.000251223	1.0966E-13	5.00225E-14
San Francis	2020	ConstMin - Graders	0.000128375	0.000118105	2.458E-14	1.12119E-14
San Francis	2020	ConstMin - Graders	0.000126694	0.000116558	1.2979E-11	5.92023E-12
San Francis	2020	ConstMin - Graders	0.000194549	0.000178985	2.1377E-11	9.7509E-12
San Francis	2020	ConstMin - Off-Highway Tractors	0	0	0	0
San Francis	2020	ConstMin - Off-Highway Tractors	0.000333427	0.000306753	2.1079E-12	9.61501E-13
San Francis	2020	ConstMin - Off-Highway Tractors	0.00018613	0.000171239	4.026E-12	1.83643E-12
San Francis	2020	ConstMin - Off-Highway Tractors	0.000421218	0.000387521	5.6002E-12	2.55446E-12
San Francis	2020	ConstMin - Off-Highway Tractors	0.000134302	0.000123558	1.609E-12	7.3394E-13
San Francis	2020	ConstMin - Off-Highway Tractors	9.41775E-05	8.66433E-05	2.0074E-12	9.15635E-13
San Francis	2020	ConstMin - Off-Highway Tractors	5.09906E-05	4.69113E-05	2.1435E-13	9.77728E-14
San Francis	2020	ConstMin - Off-Highway Tractors	9.11841E-05	8.38894E-05	6.2614E-11	2.85607E-11
San Francis	2020	ConstMin - Off-Highway Tractors	9.04338E-05	8.31991E-05	6.6506E-11	3.03362E-11
San Francis	2020	ConstMin - Off-Highway Trucks	0.000466824	0.000429478	1.0286E-07	4.69203E-08
San Francis	2020	ConstMin - Off-Highway Trucks	0.000275387	0.000253356	2.1785E-10	9.93722E-11
San Francis	2020	ConstMin - Off-Highway Trucks	7.7874E-05	7.16441E-05	1.9846E-09	9.05255E-10
San Francis	2020	ConstMin - Off-Highway Trucks	0.00027232	0.000250534	3.7027E-10	1.68895E-10
San Francis	2020	ConstMin - Off-Highway Trucks	0.000117727	0.000108309	3.1761E-13	1.44872E-13
San Francis	2020	ConstMin - Off-Highway Trucks	8.21554E-05	7.55829E-05	7.6302E-14	3.48043E-14
San Francis	2020	ConstMin - Off-Highway Trucks	7.26952E-05	6.68796E-05	4.1606E-15	1.89782E-15

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	750	Diesel	0.009982217	0.096511076	17.06785
San Francis	2020	ConstMin - Off-Highway Trucks	Aggregated	9999	Diesel	0.016199227	0.246711746	30.3145
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	50	Diesel	0.002481674	0.011656538	1.366871
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	75	Diesel	0.000320339	0.002699338	0.153276
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	100	Diesel	0.003889693	0.036007197	4.137152
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	175	Diesel	0.0017297	0.018320038	2.335593
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	300	Diesel	0.001828777	0.022884295	3.12114
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	600	Diesel	0.004871942	0.058903261	11.89536
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	750	Diesel	0.000746906	0.008914573	2.175538
San Francis	2020	ConstMin - Other Construction Equipment	Aggregated	9999	Diesel	0.00027938	0.005381286	0.750711
San Francis	2020	ConstMin - Pavers	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Pavers	Aggregated	50	Diesel	0.000374885	0.001354887	0.167398
San Francis	2020	ConstMin - Pavers	Aggregated	75	Diesel	0.000523748	0.003935104	0.274178
San Francis	2020	ConstMin - Pavers	Aggregated	100	Diesel	0.000892884	0.00946627	1.335762
San Francis	2020	ConstMin - Pavers	Aggregated	175	Diesel	0.001171539	0.012443353	2.219091
San Francis	2020	ConstMin - Pavers	Aggregated	300	Diesel	0.000582362	0.008976288	1.730904
San Francis	2020	ConstMin - Pavers	Aggregated	600	Diesel	8.73425E-05	0.001108318	0.313212
San Francis	2020	ConstMin - Pavers	Aggregated	750	Diesel	1.42042E-05	0.000145825	0.064828
San Francis	2020	ConstMin - Paving Equipment	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Paving Equipment	Aggregated	50	Diesel	0.000222667	0.001416106	0.208476
San Francis	2020	ConstMin - Paving Equipment	Aggregated	75	Diesel	4.06887E-05	0.00034965	0.025425
San Francis	2020	ConstMin - Paving Equipment	Aggregated	100	Diesel	0.000595846	0.005819671	0.871338
San Francis	2020	ConstMin - Paving Equipment	Aggregated	175	Diesel	0.000494453	0.004930073	0.943819
San Francis	2020	ConstMin - Paving Equipment	Aggregated	300	Diesel	0.000292779	0.003828276	0.669441
San Francis	2020	ConstMin - Paving Equipment	Aggregated	600	Diesel	0.00027104	0.00359503	0.689684
San Francis	2020	ConstMin - Paving Equipment	Aggregated	750	Diesel	3.45065E-05	0.000483712	0.082263
San Francis	2020	ConstMin - Paving Equipment	Aggregated	9999	Diesel	1.03881E-05	0.000268591	0.061245
San Francis	2020	ConstMin - Rollers	Aggregated	25	Diesel	3.55948E-06	6.96522E-06	0.000538
San Francis	2020	ConstMin - Rollers	Aggregated	50	Diesel	0.00541274	0.026512666	3.439854
San Francis	2020	ConstMin - Rollers	Aggregated	75	Diesel	0.000107768	0.000873961	0.030962
San Francis	2020	ConstMin - Rollers	Aggregated	100	Diesel	0.003829224	0.038490003	5.344384
San Francis	2020	ConstMin - Rollers	Aggregated	175	Diesel	0.002266128	0.025815594	5.558159
San Francis	2020	ConstMin - Rollers	Aggregated	300	Diesel	0.000421312	0.005384611	0.920324

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Off-Highway Trucks	0.003775118	0.00347311	553747.4	42364.72161	35.6371474
San Francis	2020	ConstMin - Off-Highway Trucks	0.006235752	0.00573689	983520.6	39264.79083	28.42486757
San Francis	2020	ConstMin - Other Construction Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Other Construction Equipment	0.000937866	0.00086284	44346.64	48564.25317	104.5696225
San Francis	2020	ConstMin - Other Construction Equipment	0.000200995	0.00018492	4972.874	3198.736799	10.41474033
San Francis	2020	ConstMin - Other Construction Equipment	0.002668603	0.00245512	134225.3	76233.73464	173.9543115
San Francis	2020	ConstMin - Other Construction Equipment	0.000968095	0.00089065	75775.76	23240.13525	57.5625513
San Francis	2020	ConstMin - Other Construction Equipment	0.000870934	0.00080126	101262	21372.16463	54.18479768
San Francis	2020	ConstMin - Other Construction Equipment	0.002081045	0.00191456	385931.9	46970.69323	107.8066364
San Francis	2020	ConstMin - Other Construction Equipment	0.00029134	0.00026803	70582.92	5323.535709	10.2740006
San Francis	2020	ConstMin - Other Construction Equipment	0.000126062	0.00011598	24355.98	1243.639229	2.674054951
San Francis	2020	ConstMin - Pavers	0	0	0	0	0
San Francis	2020	ConstMin - Pavers	0.000114373	0.00010522	5431.044	5868.867261	16.93986666
San Francis	2020	ConstMin - Pavers	0.00037581	0.00034574	8895.408	5749.197291	16.37520444
San Francis	2020	ConstMin - Pavers	0.000605441	0.00055701	43337.31	24999.37163	65.21848664
San Francis	2020	ConstMin - Pavers	0.000613719	0.00056462	71995.95	21204.73136	56.32505665
San Francis	2020	ConstMin - Pavers	0.000258109	0.00023746	56157.26	11818.19683	26.9626211
San Francis	2020	ConstMin - Pavers	3.7978E-05	3.494E-05	10161.83	1285.192493	2.964476666
San Francis	2020	ConstMin - Pavers	6.4017E-06	5.8896E-06	2103.279	130.5347435	0.282331111
San Francis	2020	ConstMin - Paving Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Paving Equipment	7.77252E-05	7.1507E-05	6763.784	9597.189157	20.85890381
San Francis	2020	ConstMin - Paving Equipment	2.69023E-05	2.475E-05	824.8788	670.4889882	1.832201011
San Francis	2020	ConstMin - Paving Equipment	0.000381838	0.00035129	28269.61	17284.93886	38.33528268
San Francis	2020	ConstMin - Paving Equipment	0.000265705	0.00024445	30621.16	11536.8124	25.65081415
San Francis	2020	ConstMin - Paving Equipment	0.00013569	0.00012483	21719.27	5052.484313	10.99320606
San Francis	2020	ConstMin - Paving Equipment	0.000110392	0.00010156	22376.03	2946.850196	6.483172807
San Francis	2020	ConstMin - Paving Equipment	1.23367E-05	1.135E-05	2668.929	212.5442232	0.422815618
San Francis	2020	ConstMin - Paving Equipment	4.32591E-06	3.9798E-06	1987.031	128.2811288	0.281877079
San Francis	2020	ConstMin - Rollers	9.34564E-07	8.598E-07	17.46064	32.39351909	0.145206242
San Francis	2020	ConstMin - Rollers	0.001922475	0.00176868	111602.3	144774.4112	428.2132085
San Francis	2020	ConstMin - Rollers	6.13983E-05	5.6486E-05	1004.543	746.1847122	3.339743572
San Francis	2020	ConstMin - Rollers	0.002448166	0.00225231	173392.7	102387.4915	316.1139894
San Francis	2020	ConstMin - Rollers	0.001185851	0.00109098	180328.4	64686.78023	184.7023402
San Francis	2020	ConstMin - Rollers	0.000189215	0.00017408	29858.91	7116.694176	23.66861749

Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Off-Highway Trucks	28092917.63	76966.9	0.000259	0.002508	0.443511
San Francis	2020	ConstMin - Off-Highway Trucks	49629235.94	135970.5	0.000238	0.003629	0.445898
San Francis	2020	ConstMin - Other Construction Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Other Construction Equipment	1850507.845	5069.885	0.000979	0.004598	0.539212
San Francis	2020	ConstMin - Other Construction Equipment	233647.5096	640.1302	0.001001	0.008434	0.47889
San Francis	2020	ConstMin - Other Construction Equipment	6251990.233	17128.74	0.000454	0.004204	0.483066
San Francis	2020	ConstMin - Other Construction Equipment	3539780.815	9698.03	0.000357	0.003778	0.481663
San Francis	2020	ConstMin - Other Construction Equipment	4689985.086	12849.27	0.000285	0.003562	0.485808
San Francis	2020	ConstMin - Other Construction Equipment	17996713.23	49306.06	0.000198	0.002389	0.482511
San Francis	2020	ConstMin - Other Construction Equipment	3295818.314	9029.639	0.000165	0.001975	0.481866
San Francis	2020	ConstMin - Other Construction Equipment	1134558.709	3108.38	0.00018	0.003462	0.483024
San Francis	2020	ConstMin - Pavers	0	0	0	0	0
San Francis	2020	ConstMin - Pavers	227151.8079	622.3337	0.001205	0.004354	0.537969
San Francis	2020	ConstMin - Pavers	415814.2055	1139.217	0.000919	0.006908	0.481345
San Francis	2020	ConstMin - Pavers	2025076.497	5548.155	0.000322	0.003412	0.481516
San Francis	2020	ConstMin - Pavers	3344734.555	9163.656	0.000256	0.002716	0.484324
San Francis	2020	ConstMin - Pavers	2617000.3	7169.864	0.000162	0.002504	0.482827
San Francis	2020	ConstMin - Pavers	471868.2964	1292.79	0.000135	0.001715	0.484553
San Francis	2020	ConstMin - Pavers	97901.05762	268.2221	0.000106	0.001087	0.483392
San Francis	2020	ConstMin - Paving Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Paving Equipment	332904.3887	912.0668	0.000488	0.003105	0.457151
San Francis	2020	ConstMin - Paving Equipment	45007.07771	123.3071	0.00066	0.005671	0.412381
San Francis	2020	ConstMin - Paving Equipment	1536551.133	4209.729	0.000283	0.002765	0.413964
San Francis	2020	ConstMin - Paving Equipment	1670222.435	4575.952	0.000216	0.002155	0.412513
San Francis	2020	ConstMin - Paving Equipment	1181149.948	3236.027	0.000181	0.002366	0.413742
San Francis	2020	ConstMin - Paving Equipment	1212900.903	3323.016	0.000163	0.002164	0.415095
San Francis	2020	ConstMin - Paving Equipment	145267.3739	397.9928	0.000173	0.002431	0.413389
San Francis	2020	ConstMin - Paving Equipment	108142.8781	296.2819	7.01E-05	0.001813	0.413425
San Francis	2020	ConstMin - Rollers	809.8379772	2.218734	0.003209	0.006279	0.485123
San Francis	2020	ConstMin - Rollers	5171472.489	14168.42	0.000764	0.003743	0.485566
San Francis	2020	ConstMin - Rollers	51707.15064	141.6634	0.001521	0.012339	0.437127
San Francis	2020	ConstMin - Rollers	8932259.645	24471.94	0.000313	0.003146	0.436776
San Francis	2020	ConstMin - Rollers	9301653.463	25483.98	0.000178	0.002026	0.436208
San Francis	2020	ConstMin - Rollers	1538088.705	4213.942	0.0002	0.002556	0.4368

Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O
San Francis	2020	ConstMin - Off-Highway Trucks	9.80972E-05	9.02494E-05	3.6641E-14	1.67134E-14
San Francis	2020	ConstMin - Off-Highway Trucks	9.17221E-05	8.43844E-05	1.1678E-14	5.32663E-15
San Francis	2020	ConstMin - Other Construction Equipment	0	0	0	0
San Francis	2020	ConstMin - Other Construction Equipment	0.000369975	0.000340377	6.9458E-12	3.16827E-12
San Francis	2020	ConstMin - Other Construction Equipment	0.000627981	0.000577742	4.9058E-10	2.23771E-10
San Francis	2020	ConstMin - Other Construction Equipment	0.000311594	0.000286666	6.7924E-13	3.09828E-13
San Francis	2020	ConstMin - Other Construction Equipment	0.000199648	0.000183676	2.125E-12	9.69319E-13
San Francis	2020	ConstMin - Other Construction Equipment	0.000135562	0.000124717	1.2002E-12	5.47464E-13
San Francis	2020	ConstMin - Other Construction Equipment	8.44134E-05	7.76603E-05	8.2067E-14	3.74343E-14
San Francis	2020	ConstMin - Other Construction Equipment	6.45297E-05	5.93674E-05	2.4503E-12	1.11766E-12
San Francis	2020	ConstMin - Other Construction Equipment	8.11108E-05	7.46219E-05	2.0627E-11	9.40894E-12
San Francis	2020	ConstMin - Pavers	0	0	0	0
San Francis	2020	ConstMin - Pavers	0.000367562	0.000338157	4.6204E-10	2.10753E-10
San Francis	2020	ConstMin - Pavers	0.000659768	0.000606987	1.541E-10	7.02924E-11
San Francis	2020	ConstMin - Pavers	0.00021825	0.00020079	6.4949E-12	2.96258E-12
San Francis	2020	ConstMin - Pavers	0.000133946	0.000123231	2.367E-12	1.0797E-12
San Francis	2020	ConstMin - Pavers	7.19982E-05	6.62384E-05	3.8785E-12	1.76915E-12
San Francis	2020	ConstMin - Pavers	5.87536E-05	5.40533E-05	1.1887E-10	5.42226E-11
San Francis	2020	ConstMin - Pavers	4.77343E-05	4.39156E-05	2.7682E-09	1.26267E-09
San Francis	2020	ConstMin - Paving Equipment	0	0	0	0
San Francis	2020	ConstMin - Paving Equipment	0.000170438	0.000156803	2.5314E-10	1.15469E-10
San Francis	2020	ConstMin - Paving Equipment	0.000436347	0.000401439	1.5353E-08	7.00329E-09
San Francis	2020	ConstMin - Paving Equipment	0.000181408	0.000166895	1.3122E-11	5.98558E-12
San Francis	2020	ConstMin - Paving Equipment	0.000116131	0.00010684	1.1145E-11	5.08367E-12
San Francis	2020	ConstMin - Paving Equipment	8.3862E-05	7.7153E-05	2.2219E-11	1.0135E-11
San Francis	2020	ConstMin - Paving Equipment	6.64406E-05	6.11254E-05	2.1002E-11	9.57999E-12
San Francis	2020	ConstMin - Paving Equipment	6.19944E-05	5.70348E-05	1.4702E-09	6.70607E-10
San Francis	2020	ConstMin - Paving Equipment	2.92013E-05	2.68652E-05	2.6526E-09	1.20996E-09
San Francis	2020	ConstMin - Rollers	0.00084243	0.000775036	4.031E-05	1.83872E-05
San Francis	2020	ConstMin - Rollers	0.000271375	0.000249665	9.8761E-13	4.50491E-13
San Francis	2020	ConstMin - Rollers	0.00086682	0.000797474	1.0974E-08	5.00558E-09
San Francis	2020	ConstMin - Rollers	0.000200079	0.000184073	3.6803E-13	1.67873E-13
San Francis	2020	ConstMin - Rollers	9.30664E-05	8.56211E-05	3.3982E-13	1.55006E-13
San Francis	2020	ConstMin - Rollers	8.98045E-05	8.26201E-05	1.2411E-11	5.66132E-12

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Rollers	Aggregated	600	Diesel	0.000172126	0.002142117	0.539971
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	25	Diesel	3.16608E-07	7.69191E-06	0.00093
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	50	Diesel	0.000260434	0.001167497	0.156258
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	75	Diesel	5.87202E-05	0.000344636	0.024658
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	100	Diesel	0.003847471	0.057079657	13.5099
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	175	Diesel	0.001879348	0.017319775	3.18573
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	300	Diesel	4.58882E-05	0.000652331	0.220998
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	600	Diesel	1.43644E-05	0.000220965	0.082007
San Francis	2020	ConstMin - Rough Terrain Forklifts	Aggregated	750	Diesel	2.7343E-06	3.56653E-05	0.014137
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	50	Diesel	0.000320963	0.001173609	0.152653
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	75	Diesel	0.000296942	0.002336059	0.118947
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	100	Diesel	0.000937554	0.007349914	0.581331
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	175	Diesel	0.000863786	0.008486369	0.625336
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	300	Diesel	0.000891956	0.009500898	0.698575
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	600	Diesel	0.007656819	0.082254402	7.764466
San Francis	2020	ConstMin - Rubber Tired Dozers	Aggregated	750	Diesel	0.000100317	0.001509347	0.220566
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	50	Diesel	0.001206183	0.00428026	0.478162
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	100	Diesel	0.012386376	0.104497206	11.61897
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	175	Diesel	0.019848632	0.184338482	27.61694
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	300	Diesel	0.021696324	0.25226232	41.28611
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	600	Diesel	0.029465343	0.307461685	51.29391
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	750	Diesel	0.001993545	0.021364035	3.798784
San Francis	2020	ConstMin - Rubber Tired Loaders	Aggregated	9999	Diesel	0.001930709	0.033416524	3.563233
San Francis	2020	ConstMin - Scrapers	Aggregated	25	Diesel	8.2714E-06	1.57772E-05	0.001222
San Francis	2020	ConstMin - Scrapers	Aggregated	50	Diesel	5.54997E-05	0.000112512	0.009728
San Francis	2020	ConstMin - Scrapers	Aggregated	75	Diesel	0.000183474	0.001403052	0.082742
San Francis	2020	ConstMin - Scrapers	Aggregated	100	Diesel	0.000461325	0.00472668	0.406477
San Francis	2020	ConstMin - Scrapers	Aggregated	175	Diesel	0.004707809	0.047994954	5.284197
San Francis	2020	ConstMin - Scrapers	Aggregated	300	Diesel	0.005159733	0.058845862	6.066051
San Francis	2020	ConstMin - Scrapers	Aggregated	600	Diesel	0.042558408	0.501785106	76.08493
San Francis	2020	ConstMin - Scrapers	Aggregated	750	Diesel	0.001594883	0.021870803	1.228122
San Francis	2020	ConstMin - Scrapers	Aggregated	9999	Diesel	0.002329284	0.029482604	1.761673

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Rollers	7.2458E-05	6.6661E-05	17518.76	2568.968031	8.567168294
San Francis	2020	ConstMin - Rough Terrain Forklifts	2.51912E-07	2.3176E-07	30.15923	52.14908959	0.167571316
San Francis	2020	ConstMin - Rough Terrain Forklifts	7.84253E-05	7.2151E-05	5069.62	4632.670915	17.25984552
San Francis	2020	ConstMin - Rough Terrain Forklifts	2.78167E-05	2.5591E-05	799.9926	654.9477058	2.681141052
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.00189687	0.00174512	438314	219055.7087	791.9420381
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.001162044	0.00106908	103357.5	40095.36023	151.6520407
San Francis	2020	ConstMin - Rough Terrain Forklifts	1.48884E-05	1.3697E-05	7170.028	1640.172979	6.702852629
San Francis	2020	ConstMin - Rough Terrain Forklifts	4.71473E-06	4.3376E-06	2660.617	334.9504249	1.340570526
San Francis	2020	ConstMin - Rough Terrain Forklifts	2.50188E-07	2.3017E-07	458.6668	35.32680262	0.167571316
San Francis	2020	ConstMin - Rubber Tired Dozers	0	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Dozers	9.70564E-05	8.9292E-05	4952.665	5251.775204	5.664150805
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000186379	0.00017147	3859.1	2667.26261	4.006350569
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000645202	0.00059359	18860.66	10873.22878	12.43350177
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000488876	0.00044977	20288.33	6708.606951	9.117901296
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000462705	0.00042569	22664.49	5076.258876	7.59825108
San Francis	2020	ConstMin - Rubber Tired Dozers	0.003701476	0.00340536	251909.6	33156.25163	46.55655662
San Francis	2020	ConstMin - Rubber Tired Dozers	4.22377E-05	3.8859E-05	7156.019	538.1062472	0.552600079
San Francis	2020	ConstMin - Rubber Tired Loaders	0	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Loaders	0.000386289	0.00035539	15513.43	17883.58577	21.31113843
San Francis	2020	ConstMin - Rubber Tired Loaders	0.008183404	0.00752873	376964.6	236987.0648	264.8052945
San Francis	2020	ConstMin - Rubber Tired Loaders	0.010146609	0.00933488	896001.3	319712.9438	347.3139588
San Francis	2020	ConstMin - Rubber Tired Loaders	0.008374658	0.00770469	1339482	340837.1103	323.9869019
San Francis	2020	ConstMin - Rubber Tired Loaders	0.011565089	0.01063988	1664175	268494.2282	284.9644795
San Francis	2020	ConstMin - Rubber Tired Loaders	0.000758063	0.00069742	123247.4	9992.379668	11.66352847
San Francis	2020	ConstMin - Rubber Tired Loaders	0.00084487	0.00077728	115605.2	6466.866773	5.615772966
San Francis	2020	ConstMin - Scrapers	2.19887E-06	2.023E-06	39.65302	57.17074879	0.142373293
San Francis	2020	ConstMin - Scrapers	1.5514E-05	1.4273E-05	315.6076	298.7171624	0.854239761
San Francis	2020	ConstMin - Scrapers	0.000122611	0.0001128	2684.471	1587.75874	3.844078924
San Francis	2020	ConstMin - Scrapers	0.000347746	0.00031993	13187.7	5815.05919	10.25087713
San Francis	2020	ConstMin - Scrapers	0.002581338	0.00237483	171439.9	40825.94933	92.68501406
San Francis	2020	ConstMin - Scrapers	0.002581166	0.00237467	196806.4	35295.79104	89.6951749
San Francis	2020	ConstMin - Scrapers	0.019133068	0.01760242	2468492	234205.5307	499.8726334
San Francis	2020	ConstMin - Scrapers	0.00089063	0.00081938	39845.06	2554.579625	6.691544794
San Francis	2020	ConstMin - Scrapers	0.001231971	0.00113341	57155.54	1434.826987	3.701705631

Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Rollers	898129.3583	2460.628	0.00014	0.001741	0.438889
San Francis	2020	ConstMin - Rough Terrain Forklifts	1303.72724	3.571855	0.000177	0.004307	0.520503
San Francis	2020	ConstMin - Rough Terrain Forklifts	219214.9508	600.5889	0.000867	0.003888	0.520349
San Francis	2020	ConstMin - Rough Terrain Forklifts	35647.54756	97.66451	0.001202	0.007058	0.504947
San Francis	2020	ConstMin - Rough Terrain Forklifts	21058557.02	57694.68	0.000133	0.001979	0.468324
San Francis	2020	ConstMin - Rough Terrain Forklifts	4969968.61	13616.35	0.000276	0.002544	0.467927
San Francis	2020	ConstMin - Rough Terrain Forklifts	344882.3966	944.8833	9.71E-05	0.001381	0.467778
San Francis	2020	ConstMin - Rough Terrain Forklifts	128765.261	352.7815	8.14E-05	0.001253	0.464915
San Francis	2020	ConstMin - Rough Terrain Forklifts	22079.25164	60.4911	9.04E-05	0.001179	0.467415
San Francis	2020	ConstMin - Rubber Tired Dozers	0	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Dozers	217798.3495	596.7078	0.001076	0.003934	0.511651
San Francis	2020	ConstMin - Rubber Tired Dozers	187381.7474	513.3747	0.001157	0.009101	0.463392
San Francis	2020	ConstMin - Rubber Tired Dozers	913690.5567	2503.262	0.000749	0.005872	0.464459
San Francis	2020	ConstMin - Rubber Tired Dozers	992602.4	2719.459	0.000635	0.006241	0.459897
San Francis	2020	ConstMin - Rubber Tired Dozers	1109161.445	3038.798	0.000587	0.006253	0.45977
San Francis	2020	ConstMin - Rubber Tired Dozers	12251468.89	33565.67	0.000456	0.004901	0.462643
San Francis	2020	ConstMin - Rubber Tired Dozers	350012.5337	958.9384	0.000209	0.003148	0.460021
San Francis	2020	ConstMin - Rubber Tired Loaders	0	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Loaders	744160.5667	2038.796	0.001183	0.004199	0.469063
San Francis	2020	ConstMin - Rubber Tired Loaders	20349817.98	55752.93	0.000444	0.003749	0.416802
San Francis	2020	ConstMin - Rubber Tired Loaders	47976942.94	131443.7	0.000302	0.002805	0.42021
San Francis	2020	ConstMin - Rubber Tired Loaders	71748273.32	196570.6	0.000221	0.002567	0.420064
San Francis	2020	ConstMin - Rubber Tired Loaders	89434632.3	245026.4	0.000241	0.00251	0.418681
San Francis	2020	ConstMin - Rubber Tired Loaders	6607516.414	18102.78	0.00022	0.00236	0.419691
San Francis	2020	ConstMin - Rubber Tired Loaders	6180739.134	16933.53	0.000228	0.003947	0.420849
San Francis	2020	ConstMin - Scrapers	1429.26872	3.915805	0.004225	0.008058	0.624241
San Francis	2020	ConstMin - Scrapers	11569.29506	31.6967	0.003502	0.007099	0.613805
San Francis	2020	ConstMin - Scrapers	107393.8753	294.2298	0.001247	0.009537	0.562431
San Francis	2020	ConstMin - Scrapers	526794.1905	1443.272	0.000639	0.00655	0.563272
San Francis	2020	ConstMin - Scrapers	6846743.882	18758.2	0.000502	0.005117	0.563401
San Francis	2020	ConstMin - Scrapers	7915891.463	21687.37	0.000476	0.005427	0.559409
San Francis	2020	ConstMin - Scrapers	98800087.5	270685.2	0.000314	0.003708	0.562165
San Francis	2020	ConstMin - Scrapers	1589513.67	4354.832	0.000732	0.010044	0.564027
San Francis	2020	ConstMin - Scrapers	2291721.227	6278.688	0.000742	0.009391	0.56116

Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O
San Francis	2020	ConstMin - Rollers	5.88939E-05	5.41824E-05	3.6227E-11	1.65246E-11
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.000141054	0.00012977	1.4497E-05	6.61251E-06
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.000261161	0.000240268	5.129E-10	2.33953E-10
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.000569638	0.000524067	1.9988E-08	9.11712E-09
San Francis	2020	ConstMin - Rough Terrain Forklifts	6.57555E-05	6.0495E-05	6.1753E-14	2.81682E-14
San Francis	2020	ConstMin - Rough Terrain Forklifts	0.000170684	0.000157029	1.1096E-12	5.06148E-13
San Francis	2020	ConstMin - Rough Terrain Forklifts	3.15138E-05	2.89927E-05	2.3051E-10	1.05143E-10
San Francis	2020	ConstMin - Rough Terrain Forklifts	2.67289E-05	2.45906E-05	1.6638E-09	7.58914E-10
San Francis	2020	ConstMin - Rough Terrain Forklifts	8.2719E-06	7.61015E-06	5.6285E-08	2.56739E-08
San Francis	2020	ConstMin - Rubber Tired Dozers	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000325306	0.000299282	5.2842E-10	2.41035E-10
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000726092	0.000668005	7.8825E-10	3.59551E-10
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000515489	0.00047425	3.3076E-11	1.50875E-11
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000359539	0.000330776	2.8304E-11	1.29108E-11
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000304532	0.000280169	2.2674E-11	1.03427E-11
San Francis	2020	ConstMin - Rubber Tired Dozers	0.000220551	0.000202907	1.8469E-13	8.42443E-14
San Francis	2020	ConstMin - Rubber Tired Dozers	8.80926E-05	8.10452E-05	2.2757E-10	1.03805E-10
San Francis	2020	ConstMin - Rubber Tired Loaders	0	0	0	0
San Francis	2020	ConstMin - Rubber Tired Loaders	0.000378939	0.000348624	4.9374E-11	2.25216E-11
San Francis	2020	ConstMin - Rubber Tired Loaders	0.00029356	0.000270075	7.4304E-14	3.38932E-14
San Francis	2020	ConstMin - Rubber Tired Loaders	0.000154387	0.000142036	1.326E-14	6.04828E-15
San Francis	2020	ConstMin - Rubber Tired Loaders	8.52076E-05	7.8391E-05	5.931E-15	2.70536E-15
San Francis	2020	ConstMin - Rubber Tired Loaders	9.43987E-05	8.68468E-05	3.8297E-15	1.7469E-15
San Francis	2020	ConstMin - Rubber Tired Loaders	8.3751E-05	7.70509E-05	6.9994E-13	3.1927E-13
San Francis	2020	ConstMin - Rubber Tired Loaders	9.97866E-05	9.18037E-05	7.9773E-13	3.63878E-13
San Francis	2020	ConstMin - Scrapers	0.001123074	0.001033228	1.0057E-05	4.58758E-06
San Francis	2020	ConstMin - Scrapers	0.000978906	0.000900593	1.5611E-07	7.12064E-08
San Francis	2020	ConstMin - Scrapers	0.000833435	0.00076676	1.9771E-09	9.01852E-10
San Francis	2020	ConstMin - Scrapers	0.000481885	0.000443335	8.2047E-11	3.74251E-11
San Francis	2020	ConstMin - Scrapers	0.000275222	0.000253205	4.856E-13	2.21502E-13
San Francis	2020	ConstMin - Scrapers	0.000238034	0.000218991	3.6588E-13	1.66892E-13
San Francis	2020	ConstMin - Scrapers	0.000141368	0.000130058	2.3371E-15	1.06607E-15
San Francis	2020	ConstMin - Scrapers	0.000409031	0.000376308	8.9999E-12	4.1052E-12
San Francis	2020	ConstMin - Scrapers	0.000392429	0.000361035	4.3517E-12	1.98497E-12

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	50	Diesel	0.0019375	0.01628046	2.603772
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	75	Diesel	0.004822027	0.063872596	13.52586
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	100	Diesel	0.000105931	0.001648335	0.283065
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	175	Diesel	2.73714E-05	0.000302741	0.093335
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	300	Diesel	1.59418E-05	0.000201269	0.086692
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	600	Diesel	7.28697E-06	9.82365E-05	0.025079
San Francis	2020	ConstMin - Skid Steer Loaders	Aggregated	9999	Diesel	1.86163E-05	0.000282989	0.033948
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	50	Diesel	2.15457E-05	0.000170526	0.024097
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	75	Diesel	1.82565E-05	0.00021452	0.018361
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	100	Diesel	8.11553E-05	0.000881703	0.138361
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	175	Diesel	7.51256E-05	0.000872252	0.129516
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	300	Diesel	0.000109989	0.001661466	0.255947
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	600	Diesel	0.00019708	0.002465007	0.811461
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	750	Diesel	0.000119494	0.001818713	0.40013
San Francis	2020	ConstMin - Surfacing Equipment	Aggregated	9999	Diesel	6.15681E-05	0.001205707	0.132814
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	25	Diesel	2.88892E-05	5.46631E-05	0.004177
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	50	Diesel	0.00359865	0.013699778	1.582094
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	75	Diesel	0.000561949	0.004627568	0.430242
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	100	Diesel	0.001841621	0.016092521	2.021393
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	175	Diesel	0.000533347	0.00532487	0.611535
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	300	Diesel	0.000155168	0.001923036	0.367255
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	600	Diesel	4.83035E-05	0.000554304	0.049597
San Francis	2020	ConstMin - Sweepers/Scrubbers	Aggregated	9999	Diesel	2.9482E-05	0.000510551	0.063725
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	50	Diesel	0.007406177	0.039262771	5.151648
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	75	Diesel	0.002491864	0.01956537	0.817891
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	100	Diesel	0.048995188	0.497793973	81.86261
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	175	Diesel	0.006717461	0.066069972	14.30872
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	300	Diesel	0.003822587	0.046242012	8.849741
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	600	Diesel	0.004555752	0.049672993	11.7727
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	750	Diesel	0.000103645	0.000953937	0.39818
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	Aggregated	9999	Diesel	0.001338586	0.025920924	4.023481

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Skid Steer Loaders	0	0	0	0	0
San Francis	2020	ConstMin - Skid Steer Loaders	0.000638238	0.00058718	84476.51	91151.69614	296.4905246
San Francis	2020	ConstMin - Skid Steer Loaders	0.002729349	0.002511	438831.5	326805.4403	937.8331914
San Francis	2020	ConstMin - Skid Steer Loaders	0.000106951	9.8395E-05	9183.736	6384.255445	18.96245795
San Francis	2020	ConstMin - Skid Steer Loaders	1.27334E-05	1.1715E-05	3028.156	1046.744401	3.968886547
San Francis	2020	ConstMin - Skid Steer Loaders	5.70798E-06	5.2513E-06	2812.622	720.1286672	2.498928567
San Francis	2020	ConstMin - Skid Steer Loaders	4.21801E-06	3.8806E-06	813.664	90.18004712	0.293991596
San Francis	2020	ConstMin - Skid Steer Loaders	9.28581E-06	8.5429E-06	1101.406	57.87919388	0.293991596
San Francis	2020	ConstMin - Surfacing Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Surfacing Equipment	8.70589E-06	8.0094E-06	781.8026	1238.33534	5.200867433
San Francis	2020	ConstMin - Surfacing Equipment	1.33951E-05	1.2323E-05	595.7125	572.8323598	2.267044778
San Francis	2020	ConstMin - Surfacing Equipment	4.97805E-05	4.5798E-05	4488.961	3204.053241	12.13535734
San Francis	2020	ConstMin - Surfacing Equipment	4.2718E-05	3.9301E-05	4202	1989.071492	7.867978937
San Francis	2020	ConstMin - Surfacing Equipment	5.36517E-05	4.936E-05	8303.907	2334.764144	9.73495699
San Francis	2020	ConstMin - Surfacing Equipment	8.86714E-05	8.1578E-05	26326.97	4157.831763	14.80246885
San Francis	2020	ConstMin - Surfacing Equipment	6.41272E-05	5.8997E-05	12981.77	1309.139859	4.667445132
San Francis	2020	ConstMin - Surfacing Equipment	2.87856E-05	2.6483E-05	4308.993	315.4966074	1.200200177
San Francis	2020	ConstMin - Sweepers/Scrubbers	7.5151E-06	6.9139E-06	135.5226	206.8663251	0.282711264
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.001242218	0.00114284	51329.29	54925.53207	79.58322075
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000372837	0.00034301	13958.71	8145.99224	14.27691882
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.001291714	0.00118838	65581.86	35191.24148	50.74667185
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.00027395	0.00025203	19840.6	5266.261629	7.49184849
San Francis	2020	ConstMin - Sweepers/Scrubbers	6.17512E-05	5.6811E-05	11915.18	2410.497239	3.392535165
San Francis	2020	ConstMin - Sweepers/Scrubbers	2.79819E-05	2.5743E-05	1609.131	206.8663251	0.282711264
San Francis	2020	ConstMin - Sweepers/Scrubbers	1.44871E-05	1.3328E-05	2067.49	103.4331625	0.141355632
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0	0	0	0	0
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.002569831	0.00236424	167139.6	209462.1433	414.9476254
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.001569221	0.00144368	26535.58	19327.5933	88.19444302
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.031146179	0.02865448	2655942	1672131.461	2729.256559
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.003328856	0.00306255	464230.8	170843.565	315.186698
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.001543739	0.00142024	287120.1	72700.30209	132.0025024
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.001755044	0.00161464	381952.3	60090.90449	114.2190328
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	2.63055E-05	2.4201E-05	12918.5	1080.188074	1.590391595
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.000526101	0.00048401	130537.4	3699.700598	6.072404274

Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Skid Steer Loaders	0	0	0	0	0
San Francis	2020	ConstMin - Skid Steer Loaders	3972207.003	10882.76	0.000356	0.002992	0.478513
San Francis	2020	ConstMin - Skid Steer Loaders	23027519.99	63089.1	0.000153	0.002025	0.428786
San Francis	2020	ConstMin - Skid Steer Loaders	487303.223	1335.077	0.000159	0.002469	0.424043
San Francis	2020	ConstMin - Skid Steer Loaders	159340.8469	436.5503	0.000125	0.001387	0.427603
San Francis	2020	ConstMin - Skid Steer Loaders	147612.7678	404.4185	7.88E-05	0.000995	0.428724
San Francis	2020	ConstMin - Skid Steer Loaders	42637.12628	116.814	0.000125	0.001682	0.429385
San Francis	2020	ConstMin - Skid Steer Loaders	57879.19388	158.5731	0.000235	0.003569	0.428169
San Francis	2020	ConstMin - Surfacing Equipment	0	0	0	0	0
San Francis	2020	ConstMin - Surfacing Equipment	44589.53268	122.1631	0.000353	0.002792	0.394506
San Francis	2020	ConstMin - Surfacing Equipment	38090.84798	104.3585	0.00035	0.004111	0.351889
San Francis	2020	ConstMin - Surfacing Equipment	287731.3371	788.305	0.000206	0.002237	0.351033
San Francis	2020	ConstMin - Surfacing Equipment	269834.8375	739.2735	0.000203	0.00236	0.350387
San Francis	2020	ConstMin - Surfacing Equipment	532376.6979	1458.566	0.000151	0.002278	0.350956
San Francis	2020	ConstMin - Surfacing Equipment	1689408.431	4628.516	8.52E-05	0.001065	0.350636
San Francis	2020	ConstMin - Surfacing Equipment	832625.1852	2281.165	0.000105	0.001595	0.350812
San Francis	2020	ConstMin - Surfacing Equipment	276411.6203	757.2921	0.000163	0.003184	0.350759
San Francis	2020	ConstMin - Sweepers/Scrubbers	5171.658127	14.16893	0.004078	0.007716	0.589619
San Francis	2020	ConstMin - Sweepers/Scrubbers	1959985.384	5369.823	0.00134	0.005103	0.589254
San Francis	2020	ConstMin - Sweepers/Scrubbers	590192.5415	1616.966	0.000695	0.005724	0.532159
San Francis	2020	ConstMin - Sweepers/Scrubbers	2784208.395	7627.968	0.000483	0.004219	0.529995
San Francis	2020	ConstMin - Sweepers/Scrubbers	841718.8947	2306.079	0.000463	0.004618	0.530368
San Francis	2020	ConstMin - Sweepers/Scrubbers	505490.4791	1384.905	0.000224	0.002777	0.530368
San Francis	2020	ConstMin - Sweepers/Scrubbers	68265.88728	187.0298	0.000517	0.005927	0.530368
San Francis	2020	ConstMin - Sweepers/Scrubbers	87711.32184	240.305	0.000245	0.004249	0.530368
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0	0	0	0	0
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	7940504.038	21754.81	0.000681	0.00361	0.47361
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	1392346.89	3814.649	0.001306	0.010258	0.428816
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	139016704.9	380867.7	0.000257	0.002614	0.429874
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	24495788.65	67111.75	0.0002	0.001969	0.426415
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	15092768.06	41350.05	0.000185	0.002237	0.42804
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	20227568.89	55418	0.000164	0.001793	0.424869
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	686116.4724	1879.771	0.00011	0.001015	0.423647
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	6845773.63	18755.54	0.000143	0.002764	0.429044

Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O
San Francis	2020	ConstMin - Skid Steer Loaders	0	0	0	0
San Francis	2020	ConstMin - Skid Steer Loaders	0.000117293	0.00010791	1.6987E-12	7.74828E-13
San Francis	2020	ConstMin - Skid Steer Loaders	8.65236E-05	7.96017E-05	5.6407E-14	2.57293E-14
San Francis	2020	ConstMin - Skid Steer Loaders	0.000160217	0.0001474	1.2737E-10	5.80971E-11
San Francis	2020	ConstMin - Skid Steer Loaders	5.83366E-05	5.36697E-05	1.1813E-09	5.3885E-10
San Francis	2020	ConstMin - Skid Steer Loaders	2.82281E-05	2.59698E-05	1.3729E-09	6.26236E-10
San Francis	2020	ConstMin - Skid Steer Loaders	7.22176E-05	6.64402E-05	1.643E-08	7.49446E-09
San Francis	2020	ConstMin - Skid Steer Loaders	0.000117117	0.000107748	8.9414E-09	4.07853E-09
San Francis	2020	ConstMin - Surfacing Equipment	0	0	0	0
San Francis	2020	ConstMin - Surfacing Equipment	0.000142529	0.000131127	1.6351E-08	7.45836E-09
San Francis	2020	ConstMin - Surfacing Equipment	0.000256712	0.000236175	2.512E-08	1.14582E-08
San Francis	2020	ConstMin - Surfacing Equipment	0.000126298	0.000116194	4.4131E-10	2.01298E-10
San Francis	2020	ConstMin - Surfacing Equipment	0.000115568	0.000106322	5.0271E-10	2.29308E-10
San Francis	2020	ConstMin - Surfacing Equipment	7.35677E-05	6.76823E-05	1.2894E-10	5.88128E-11
San Francis	2020	ConstMin - Surfacing Equipment	3.83153E-05	3.525E-05	1.2816E-11	5.84572E-12
San Francis	2020	ConstMin - Surfacing Equipment	5.62232E-05	5.17254E-05	5.2734E-11	2.40541E-11
San Francis	2020	ConstMin - Surfacing Equipment	7.60225E-05	6.99407E-05	4.7857E-10	2.18294E-10
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.001060787	0.000975924	8.1327E-07	3.70964E-07
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000462666	0.000425653	5.6657E-12	2.58437E-12
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000461156	0.000424264	6.9189E-11	3.15598E-11
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000338678	0.000311584	3.1217E-12	1.42393E-12
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000237589	0.000218582	3.4131E-11	1.55687E-11
San Francis	2020	ConstMin - Sweepers/Scrubbers	8.91776E-05	8.20434E-05	9.4637E-11	4.31678E-11
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000299224	0.000275286	5.189E-09	2.36689E-09
San Francis	2020	ConstMin - Sweepers/Scrubbers	0.000120573	0.000110927	3.1432E-09	1.43375E-09
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0	0	0	0
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.000236254	0.000217354	4.2948E-13	1.95905E-13
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.000822734	0.000756915	1.5428E-11	7.03716E-12
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	0.000163554	0.000150469	1.5438E-15	7.04187E-16
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	9.92034E-05	9.12671E-05	5.0124E-14	2.28638E-14
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	7.46669E-05	6.86935E-05	1.3154E-13	5.99986E-14
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	6.33384E-05	5.82713E-05	7.3777E-14	3.36527E-14
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	2.7988E-05	2.5749E-05	6.4308E-11	2.93335E-11
San Francis	2020	ConstMin - Tractors/Loaders/Backhoes	5.61009E-05	5.16128E-05	6.3785E-13	2.90948E-13

Region	CalYr	VehClass	MdlYr	HP_Bin	Fuel	ROG_tpd	NOx_tpd	CO2_tpd
San Francis	2020	ConstMin - Trenchers	Aggregated	25	Diesel	0	0	0
San Francis	2020	ConstMin - Trenchers	Aggregated	50	Diesel	0.002796097	0.014450091	1.821794
San Francis	2020	ConstMin - Trenchers	Aggregated	75	Diesel	0.000218239	0.001824789	0.121587
San Francis	2020	ConstMin - Trenchers	Aggregated	100	Diesel	0.001297574	0.01188563	1.19855
San Francis	2020	ConstMin - Trenchers	Aggregated	175	Diesel	0.000216775	0.002298143	0.269564
San Francis	2020	ConstMin - Trenchers	Aggregated	300	Diesel	0.000432398	0.005299349	0.654464
San Francis	2020	ConstMin - Trenchers	Aggregated	600	Diesel	0.000365114	0.00428087	0.878508
San Francis	2020	ConstMin - Trenchers	Aggregated	750	Diesel	4.0158E-05	0.00033812	0.286764
San Francis	2020	ConstMin - Trenchers	Aggregated	9999	Diesel	5.21664E-05	0.000598555	0.02377
San Francis	2020	OFF - ConstMin - Bore/Drill Rigs	Aggregated	25	Diesel	0.000197908	0.001510908	0.199745
San Francis	2020	OFF - ConstMin - Cement and Mortar Mixers	Aggregated	25	Diesel	0.000501332	0.003783187	0.511569
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	Aggregated	25	Diesel	1.64316E-05	0.00012564	0.016481
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	Aggregated	50	Diesel	0.000300517	0.001912874	0.259021
San Francis	2020	OFF - ConstMin - Dumpers/Tenders	Aggregated	25	Diesel	5.10357E-05	0.00039044	0.051165
San Francis	2020	OFF - ConstMin - Excavators	Aggregated	25	Diesel	0.000357595	0.002734257	0.358668
San Francis	2020	OFF - ConstMin - Other Construction Equipm	Aggregated	25	Diesel	0.001153068	0.008752139	1.190738
San Francis	2020	OFF - ConstMin - Pavers	Aggregated	25	Diesel	9.69066E-05	0.000742199	0.09706
San Francis	2020	OFF - ConstMin - Paving Equipment	Aggregated	25	Diesel	0.00011462	0.000876409	0.114964
San Francis	2020	OFF - ConstMin - Plate Compactors	Aggregated	25	Diesel	0.000338654	0.00256614	0.352021
San Francis	2020	OFF - ConstMin - Rollers	Aggregated	25	Diesel	0.002067825	0.015736831	2.113412
San Francis	2020	OFF - ConstMin - Rubber Tired Loaders	Aggregated	25	Diesel	9.55159E-05	0.000730337	0.095802
San Francis	2020	OFF - ConstMin - Signal Boards	Aggregated	25	Diesel	0.005292913	0.04010694	5.501833
San Francis	2020	OFF - ConstMin - Signal Boards	Aggregated	50	Diesel	0.000131267	0.000832547	0.114493
San Francis	2020	OFF - ConstMin - Skid Steer Loaders	Aggregated	25	Diesel	0.009567861	0.072352115	9.329592
San Francis	2020	OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregated	25	Diesel	0.001774568	0.01356876	1.77989
San Francis	2020	OFF - ConstMin - Trenchers	Aggregated	25	Diesel	0.000836199	0.006382814	0.844522

Region	CalYr	VehClass	PM10_tpd	PM2_5_tpd	Fuel_gpy	Total_Activity_hpy	Total_Population
San Francis	2020	ConstMin - Trenchers	0	0	0	0	0
San Francis	2020	ConstMin - Trenchers	0.001100235	0.00101222	59106.11	51190.43819	136.0652475
San Francis	2020	ConstMin - Trenchers	0.000125229	0.00011521	3944.772	2142.391895	8.194838768
San Francis	2020	ConstMin - Trenchers	0.000901259	0.00082916	38885.62	17805.89471	54.88995779
San Francis	2020	ConstMin - Trenchers	0.000117505	0.0001081	8745.699	2359.873475	8.349458367
San Francis	2020	ConstMin - Trenchers	0.000213516	0.00019643	21233.36	3560.420084	11.59646995
San Francis	2020	ConstMin - Trenchers	0.000160924	0.00014805	28502.23	2812.428323	7.885599569
San Francis	2020	ConstMin - Trenchers	4.93339E-06	4.5387E-06	9303.757	553.10343	1.236956795
San Francis	2020	ConstMin - Trenchers	2.76382E-05	2.5427E-05	771.204	34.49350982	0.154619599
San Francis	2020	OFF - ConstMin - Bore/Drill Rigs	5.6873E-05	5.2323E-05	6624.75	10011.95	12.34
San Francis	2020	OFF - ConstMin - Cement and Mortar Mixers	0.000150347	0.00013832	17019.95	51559.9	171.7
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	4.69456E-06	4.319E-06	532.9	722.7	1.2
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	9.66266E-05	8.8896E-05	8661.45	6245.15	10.74
San Francis	2020	OFF - ConstMin - Dumpers/Tenders	1.48788E-05	1.3689E-05	1682.65	4909.25	7.37
San Francis	2020	OFF - ConstMin - Excavators	0.000102166	9.3993E-05	11924.55	15939.55	11.36
San Francis	2020	OFF - ConstMin - Other Construction Equipm	0.000339149	0.00031202	39693.75	82406.05	119.33
San Francis	2020	OFF - ConstMin - Pavers	2.86506E-05	2.6359E-05	3212	3796	4.6
San Francis	2020	OFF - ConstMin - Paving Equipment	3.27303E-05	3.0112E-05	3817.9	6646.65	7.97
San Francis	2020	OFF - ConstMin - Plate Compactors	0.000100273	9.2251E-05	11716.5	59619.1	99.33
San Francis	2020	OFF - ConstMin - Rollers	0.000601858	0.00055371	70372	184043.95	264.59
San Francis	2020	OFF - ConstMin - Rubber Tired Loaders	2.72893E-05	2.5106E-05	3197.4	4135.45	4.25
San Francis	2020	OFF - ConstMin - Signal Boards	0.001567195	0.00144182	183449	651561.5	867.99
San Francis	2020	OFF - ConstMin - Signal Boards	4.15007E-05	3.8181E-05	3799.65	2288.55	4.33
San Francis	2020	OFF - ConstMin - Skid Steer Loaders	0.002942771	0.00270735	310235.4	494155.25	592.07
San Francis	2020	OFF - ConstMin - Tractors/Loaders/Backhoes	0.000510756	0.0004699	59184.75	82000.9	86.95
San Francis	2020	OFF - ConstMin - Trenchers	0.000240562	0.00022132	28079.45	29367.9	47.44

Region	CalYr	VehClass	Horsepower_Hours_hhpy	hp-hr/day	ROG	NOx	CO2
San Francis	2020	ConstMin - Trenchers	0	0	0	0	0
San Francis	2020	ConstMin - Trenchers	2042290.903	5595.318	0.000999	0.005165	0.651185
San Francis	2020	ConstMin - Trenchers	151244.6238	414.3688	0.001053	0.008808	0.586856
San Francis	2020	ConstMin - Trenchers	1493823.309	4092.667	0.000634	0.005808	0.585706
San Francis	2020	ConstMin - Trenchers	337682.3204	925.157	0.000469	0.004968	0.582742
San Francis	2020	ConstMin - Trenchers	814740.7177	2232.166	0.000387	0.004748	0.586393
San Francis	2020	ConstMin - Trenchers	1092586.161	2993.387	0.000244	0.00286	0.586966
San Francis	2020	ConstMin - Trenchers	357699.2491	979.9979	8.2E-05	0.00069	0.585235
San Francis	2020	ConstMin - Trenchers	29664.41845	81.27238	0.001284	0.01473	0.584956
San Francis	2020	OFF - ConstMin - Bore/Drill Rigs	155201.65	425.21	0.000931	0.007107	0.939513
San Francis	2020	OFF - ConstMin - Cement and Mortar Mixers	532075.1	1457.74	0.000688	0.00519	0.701866
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	13008.6	35.64	0.000922	0.00705	0.924852
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	206089.95	564.63	0.001064	0.006776	0.91749
San Francis	2020	OFF - ConstMin - Dumpers/Tenders	78548	215.2	0.000474	0.003629	0.475514
San Francis	2020	OFF - ConstMin - Excavators	366609.65	1004.41	0.000712	0.005445	0.714186
San Francis	2020	OFF - ConstMin - Other Construction Equipm	1119020.65	3065.81	0.000752	0.00571	0.776785
San Francis	2020	OFF - ConstMin - Pavers	91104	249.6	0.000776	0.005947	0.777724
San Francis	2020	OFF - ConstMin - Paving Equipment	126286.35	345.99	0.000663	0.005066	0.664548
San Francis	2020	OFF - ConstMin - Plate Compactors	476952.8	1306.72	0.000518	0.003928	0.538785
San Francis	2020	OFF - ConstMin - Rollers	2199150.55	6025.07	0.000686	0.005224	0.701539
San Francis	2020	OFF - ConstMin - Rubber Tired Loaders	103386.25	283.25	0.000674	0.005157	0.676451
San Francis	2020	OFF - ConstMin - Signal Boards	3909369	10710.6	0.000988	0.007489	1.027362
San Francis	2020	OFF - ConstMin - Signal Boards	84676.35	231.99	0.001132	0.007177	0.987055
San Francis	2020	OFF - ConstMin - Skid Steer Loaders	9883105	27077	0.000707	0.005344	0.689116
San Francis	2020	OFF - ConstMin - Tractors/Loaders/Backhoes	1886020.7	5167.18	0.000687	0.005252	0.688921
San Francis	2020	OFF - ConstMin - Trenchers	656058.3	1797.42	0.00093	0.007102	0.939704

Region	CalYr	VehClass	PM10	PM2.5	CH4	N2O
San Francis	2020	ConstMin - Trenchers	0	0	0	0
San Francis	2020	ConstMin - Trenchers	0.00039327	0.000361808	4.722E-12	2.15389E-12
San Francis	2020	ConstMin - Trenchers	0.000604434	0.000556079	9.5537E-10	4.35784E-10
San Francis	2020	ConstMin - Trenchers	0.000440426	0.000405192	9.8127E-12	4.47595E-12
San Francis	2020	ConstMin - Trenchers	0.000254022	0.0002337	1.9301E-10	8.80381E-11
San Francis	2020	ConstMin - Trenchers	0.000191308	0.000176003	3.2949E-11	1.50292E-11
San Francis	2020	ConstMin - Trenchers	0.00010752	9.89179E-05	1.8304E-11	8.34908E-12
San Francis	2020	ConstMin - Trenchers	1.00682E-05	9.26271E-06	1.7128E-10	7.81262E-11
San Francis	2020	ConstMin - Trenchers	0.000680139	0.000625728	2.4916E-08	1.1365E-08
San Francis	2020	OFF - ConstMin - Bore/Drill Rigs	0.000267506	0.000246105	5.5438E-10	2.52876E-10
San Francis	2020	OFF - ConstMin - Cement and Mortar Mixers	0.000206274	0.000189772	6.2942E-11	2.87106E-11
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	0.000263444	0.000242368	8.2224E-08	3.75057E-08
San Francis	2020	OFF - ConstMin - Concrete/Industrial Saws	0.000342265	0.000314884	3.1932E-10	1.45655E-10
San Francis	2020	OFF - ConstMin - Dumpers/Tenders	0.000138279	0.000127217	4.3127E-09	1.96718E-09
San Francis	2020	OFF - ConstMin - Excavators	0.000203436	0.000187161	1.3039E-10	5.9474E-11
San Francis	2020	OFF - ConstMin - Other Construction Equipm	0.000221246	0.000203546	1.2833E-11	5.85347E-12
San Francis	2020	OFF - ConstMin - Pavers	0.000229572	0.000211206	1.9479E-09	8.88506E-10
San Francis	2020	OFF - ConstMin - Paving Equipment	0.000189198	0.000174062	1.1822E-09	5.39253E-10
San Francis	2020	OFF - ConstMin - Plate Compactors	0.000153473	0.000141195	1.02E-10	4.65265E-11
San Francis	2020	OFF - ConstMin - Rollers	0.000199784	0.000183802	3.6832E-12	1.68004E-12
San Francis	2020	OFF - ConstMin - Rubber Tired Loaders	0.000192687	0.000177272	1.7243E-09	7.86527E-10
San Francis	2020	OFF - ConstMin - Signal Boards	0.000292644	0.000269232	7.9479E-13	3.62536E-13
San Francis	2020	OFF - ConstMin - Signal Boards	0.00035778	0.000329158	1.7716E-09	8.08105E-10
San Francis	2020	OFF - ConstMin - Skid Steer Loaders	0.000217363	0.000199974	1.859E-13	8.47986E-14
San Francis	2020	OFF - ConstMin - Tractors/Loaders/Backhoes	0.000197692	0.000181877	5.1064E-12	2.32926E-12
San Francis	2020	OFF - ConstMin - Trenchers	0.000267674	0.00024626	3.0942E-11	1.41137E-11

APPENDIX C

Odor Control *from* Headworks Project Basis of Design Report, May 17, 2019

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8.0 ODOR CONTROL

This section serves the following purposes:

- Describes the basis of design for odor control serving HW3
- Summarizes applicable, previous work; namely the 2015 *CIP Program Study 3 Odor and Corrosion Control Study* (Study) (CH2M, 2015)
- Summarizes several predesign studies that were used to further define the scope and basis of design for the odor control system

8.1 Previous Odor/Corrosion Study

The Study (CH2M, 2015) provided a comprehensive analysis of existing odor emissions conditions at the RWF and included recommendations for required mitigation measures to meet offsite odor limits. This section summarizes specific findings and conclusions pertinent to this Project.

8.1.1 Offsite Odor Limits

An odor concentration criterion of five dilutions to threshold (D/T) was selected for the RWF based on the following information:

- The 5 D/T criterion is consistent with the RWF odor goal established in the *Plant Master Plan* (PMP) (Carollo Engineers et al., 2013) and the *Environmental Impact Report* (City, 2013) adopted by City Council on November 19, 2013.
- It is consistent with the 5 D/T regulatory standard set by the Bay Area Air Quality Management District (BAAQMD).
- It aligns with odor planning goals currently established by wastewater treatment facilities (WWTFs) in similar settings within the San Francisco bay area (and under the jurisdiction of the BAAQMD).
- The 5 D/T criterion corresponds with the lower range (typically between 5 and 10 D/T) at which most people can detect the presence of an odor above background distractions.

These criteria are based on a 1-hour average (duration) and 99 percent compliance (that is, 88 hours per year in which the odor goal may be exceeded). These offsite odor criteria also apply to the Phase 1 fenceline boundary. Future Phase 2 and Phase 3 fenceline boundaries may be implemented, depending on the development of RWF lands that, in the future, will not be needed for treatment operations. The odor goal criteria will be met at each fenceline boundary before the RWF lands are developed.

BAAQMD Rule 9-2 standards (BAAQMD, 1999) stipulate a maximum hydrogen sulfide (H_2S) offsite concentration of 0.06 parts per million (ppm) based on a 3-minute average, and a maximum H_2S offsite concentration of 0.03 ppm based on a 1-hour average. These criteria, while not included in the offsite odor limits, will be a focus of the BAAQMD for permitting purposes. Modeling will be conducted to confirm compliance with these criteria during the upcoming permitting phase.

8.1.2 Proposed Headworks Odor Control

The Study assumed HW3 would be adjacent to the existing HW2. Furthermore, it found that both HW2 and HW3 would require odor mitigation to meet the required offsite odor goals. Air

dispersion modeling for the untreated HW2 and HW3 condition assumed open areas at HW3 similar to that currently found at HW2. Finally, the Study recommended that biotrickling filter (BTF) technology be implemented for serving both sources based on the following performance requirements:

- H_2S Removal: Greater than or equal to 99 percent
- Organic Sulfur Volatile Organic Compound (VOC) Removal: Greater than 70 percent

8.2 Predesign Studies

Two separate predesign studies were completed as part of the preliminary design, summarized herein.

8.2.1 Near-EBOS Location

An evaluation was completed to confirm the proposed near-EBOS location for HW3 would be able to meet the offsite odor criteria. The same dispersion model used in the previous Study was used to run several different scenarios. The model was also modified to include diurnal and seasonal peaking factors, to better simulate predicted emissions based on actual East Primary OdaLog measurements. The model used in the previous Study assumed a continuous average emission value throughout the year. All model scenarios included all sources at the site with treatment (future condition).

Note, proposed future land use south of the WRF fenceline could result in sensitive receptors encroaching closer to that boundary. This fact underscores the need for the selected HW3 odor control approach to meet the strict fenceline limits stipulated herein at the plant boundary, as opposed to some designated receptors beyond the fenceline.

8.2.1.1 Model Scenarios

The following specific scenarios were modeled:

- Average Conditions: This model scenario evaluated both the original indicative design location and the near-EBOS location, assuming BTFs with 25-foot-tall stacks under average emission conditions.
- Peaking Factor Condition: This model scenario evaluated both the original indicative design location and the near-EBOS location, assuming BTFs with 35-foot-tall stacks under diurnal and seasonal peaking conditions.
- Peaking Factor Conditions with Biofilter: This model scenario evaluated both the original indicative design location and the near-EBOS location, assuming higher-performing biofilters with 30-foot-tall stacks under diurnal and seasonal peaking conditions.
- Peaking Factor Condition with Relocated Stack: This model scenario evaluated both the original indicative design location and the near-EBOS location, assuming BTFs with remote 30-foot-tall stacks under diurnal and seasonal peaking conditions.

8.2.1.2 Model Description

AERMOD is the current EPA standard for demonstrating Clean Air Act assent and the industry standard used for odor impact risk assessments. AERMOD is a Gaussian plume model that implements boundary layer turbulence theory to calculate pollutant mass distribution from the plume centerline. Previous industry standard models (such as the Industrial Source Complex Model) implemented empirical relationships between pollutant mass distribution and

atmospheric stability class categories. Gaussian puff models (such as CALPUFF) are also commonly used to predict pollutant dispersion. However, puff models are more suited to track the long-range pollutant trajectory and fate resulting from release events. AERMOD is the most appropriate model for assessing the ongoing risk of odor impacts at receptors near continuously emitting sources. AERMOD tracks plume interaction with terrain, accounts for building downwash (wake) effects, and has been validated for line-of-sight downwind impact projections such as are relevant to this assessment.

There is no provision in AERMOD (or other Gaussian plume models) for calibration. The model was calibrated during its development by EPA, and adjustments to the model algorithms are not allowed. As such, AERMOD's predictive accuracy depends on the degree to which the input data correspond to actual conditions. Therefore, a rigorous effort was made during the previous Study (CH2M, 2015) to obtain input data defining the odor sources as accurately as possible. Absolute predictive accuracy is beyond what should be expected, and it is not needed for odor risk assessments. Rather, the model is an excellent tool for assessing the relative risk of offsite impacts due to different sources, source configurations, and climatic conditions.

AERMOD calculates plume interactions with topography and accounts for obstacles caused by hills, ridges, and other steep terrain elements. Topographical elevation data were obtained from the U.S. Geological Survey in the form of digital elevation model (DEM) files for the RWF and surrounding region. The DEM files were imported into AERMAP and base elevations were assigned to all model objects including buildings, tanks, receptors, and sources.

A receptor array is defined across the region where odor impacts are anticipated. Receptor density is increased near sources and spread out further away to manage computer run time. Receptors were spaced 50 meters (m) apart out to 1,000 meters from the WRF, 100 meters apart out to 2,000 meters, and 200 meters apart out to 5,000 meters. Figure 8-1 provides an illustration of the receptor grid used for the model. RWF sources are represented in red lines. As shown, the grid density is increased closer to the sources, where tighter resolution is needed and the grid extends out approximately 2 miles from the RWF.

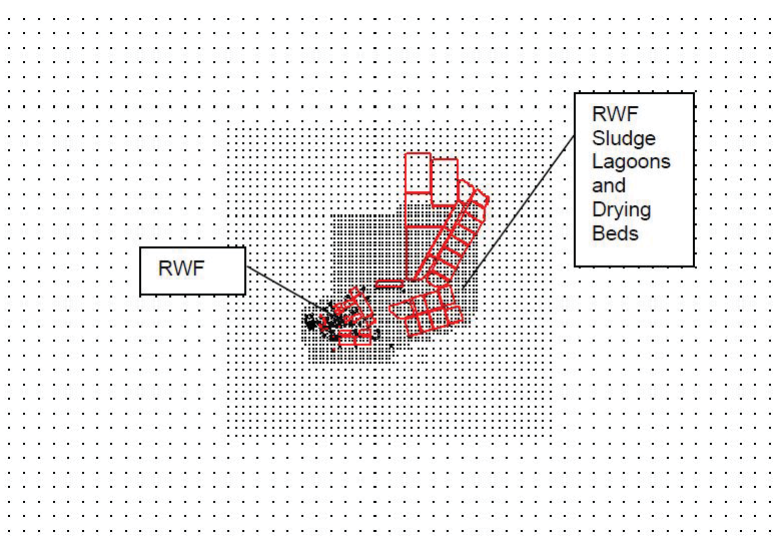

Figure 8-1. AERMOD Receptor Grid

8.2.1.3 Model Meteorological Data

Meteorological data were obtained from the Norman Y. Mineta San Jose International Airport (SJC Airport), which is the nearest meteorological station that maintains records on all the parameters required as input to the model. SJC Airport is located 3 miles south of the RWF, and there are no large terrain features between the RWF and the airport. The airport's proximity to

the RWF means the airport meteorological data should be highly representative of conditions at the RWF for dispersion modeling. Figure 8-2 is a wind rose representing meteorological wind patterns measured at the SJC Airport meteorological monitoring station in 2010. As indicated, winds primarily blow from the northwest and southeast direction, and up to 9.13 percent calms are experienced annually.

In addition to surface weather parameters, upper air data are needed to determine the atmospheric mixing height (inversion layer elevation). These were obtained from weather balloon soundings performed twice daily by the airport.

Five years of meteorological data were initially screened and evaluated to select a representative year to be used for all dispersion modeling in this study. For consistency, the same data were considered as were used in the previous Study (CH2M, 2015). These data included 5 years of data for 2006 through 2010. Year 2010 was selected due to lowest percentage of missing data, similarity to other years, and the fact that the maximum number of odor complaints occurred in 2010. The BAAQMD did not pre-approve the meteorological data .

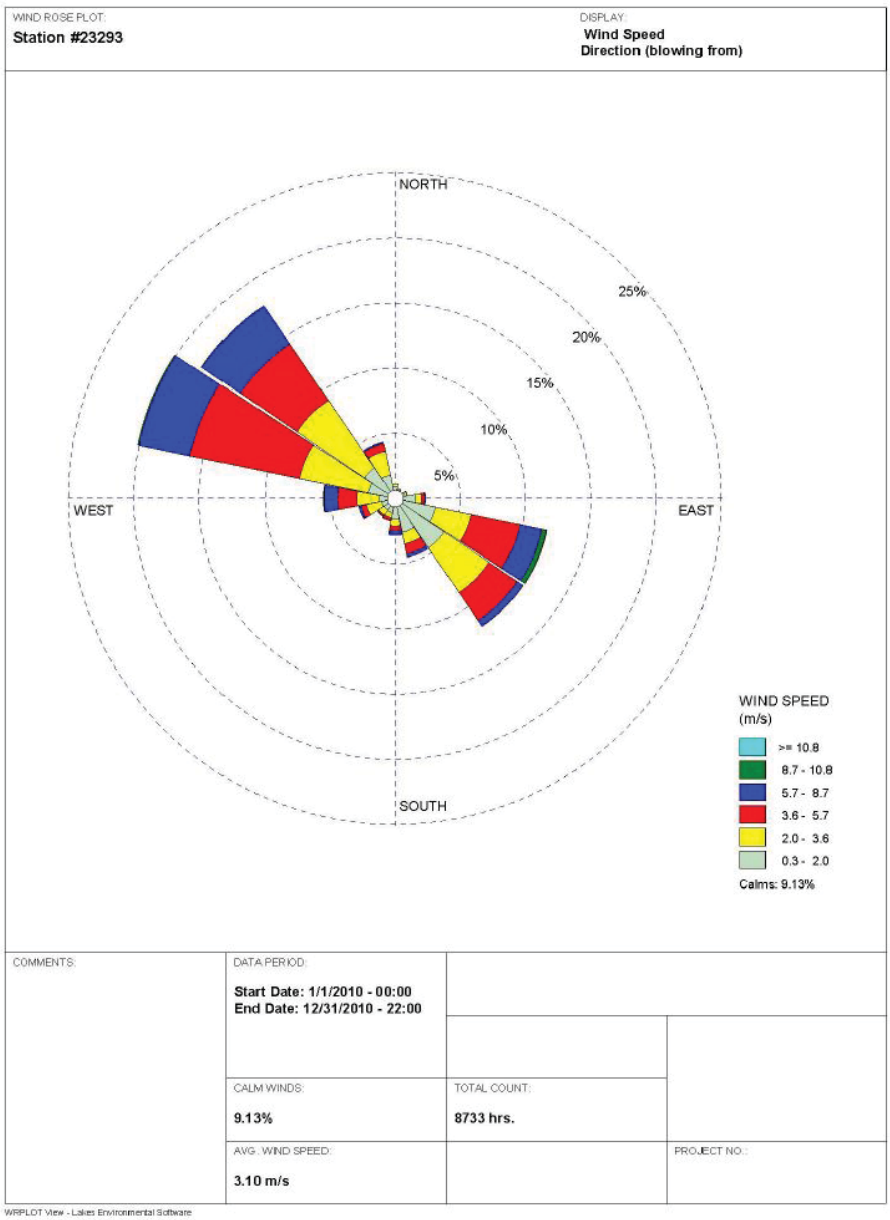

Figure 8-2. Wind Rose for SJC Airport Meteorological Monitoring Station in 2010

8.2.1.4 Model Inputs

Table 8-1 provides the model inputs for each model scenario for the treatment system serving the HW3 near-EBOS location. The table does not include other plant sources, since model inputs for these other sources can be referenced from the previous Study.

Table 8-1. Near-EBOS HW3 Location Evaluation Model Inputs
San José WRF Headworks No. 3

Parameter	Scenarios			
	Average Conditions	Peaking Factor Condition [a,b]	Peaking Factor Condition with Biofilter [a,b]	Peaking Factor Condition with Relocated Stack [a,b]
Airflow, cfm	13,500			
Summer Average Inlet, D/T	35,000	150,187[c]	35,000	35,000
Summer Peak Inlet, D/T	NA	446,809[d]	210,000	210,000
Winter Average Inlet, D/T	35,000	48,936[e]	23,000[f]	23,000[f]
Winter Peak Inlet, D/T	NA	140,000[f]	140,000[f]	140,000[f]
Summer Average Outlet, D/T	1,752[g]	1,752[g]	1,602[h]	1,752[g]
Summer Peak Outlet, D/T	NA	4,718[g]	4,568[h]	4,718[g]
Winter Average Outlet, D/T	1752[g]	739[g]	589[h]	739[g]
Winter Peak Outlet, D/T	NA	3,229[g]	3,079[h]	3,229[g]
Summer Average Outlet Emission Rate, OU/s	11,161	11,161	10,205	11,161
Summer Peak Outlet Emission Rate, OU/s	NA	30,059	29,103	30,059
Winter Average Outlet Emission Rate, OU/s	11,161	4,710	3,755	4,710
Winter Peak Outlet Emission Rate, OU/s	NA	20,570	19,614	20,570
Stack Height, feet	25	35	30	30
Exit Velocity, fpm	2,500	2,500	2,500	2,500

[a] Diurnal Peaking Factors: Average = 4:00am – 6:00pm; Peak = midnight – 4:00am and 6:00pm - midnight
[b] Seasonal Peaking Factors: Summer = June – September; Winter = January – May and October - December

Table 8-1. Near-EBOS HW3 Location Evaluation Model Inputs
San José WRF Headworks No. 3

Parameter	Scenarios			
	Average Conditions	Peaking Factor Condition [a,b]	Peaking Factor Condition with Biofilter [a,b]	Peaking Factor Condition with Relocated Stack [a,b]

[c] Based on 120 MGD, 0.75 mg/L dissolved sulfide stripped, and converting H_2S to D/T by assuming a 0.47 ppb H_2S to 1 D/T correlation
[d] Based on a peak H_2S concentration of 210 ppm and converting H_2S to D/T by assuming a 0.47 ppb H_2S to 1 D/T correlation
[e] Based on an average winter H_2S value of 23 ppm and converting H_2S to D/T by assuming a 0.47 ppb H_2S to 1 D/T correlation
[f] Assumed to be 2/3 of summer peak
[g] Assuming a 90% removal of D/T (as H_2S) and 75% removal of VOC's (D/T value attributed to VOCs assumed to be 1000 D/T)
[h] Assuming a 90% removal of D/T (as H_2S) and 90% removal of VOC's (D/T value attributed to VOCs assumed to be 1000 D/T)

Notes:

cfm = cubic feet per minute
fpm = feet per minute
NA = not applicable
OU/s = Odor units per second

Note, diurnal and seasonal peaking factors are believed to more accurately represent actual real-life emissions than the application of a single average- or peak-value constant for the entire year. The previous Study (CH2M, 2015) applied a constant emission value at sources, which was believed to be appropriate based on the nature of the evaluation (that is, a concept-level study). However, to progress into final design, the application of peaking factors is believed to better represent the dynamics associated with source emissions.

8.2.1.5 Model Results

The model results indicated each scenario met the offsite odor limits. Therefore, it could be concluded that moving HW3 to the proposed near-EBOS location would not have an appreciable impact on odor control or the ability to meet the offsite limits.

Figure 8-3 provides an isopleth plot of the peaking factor condition with BTFs for both the indicative design location for HW3 and the near-EBOS location for HW3. An isopleth is a graphical plot of equal concentration lines or equal lines of exceedances superimposed over a Google Earth aerial photograph of the model area (in this case, the RWF with the neighboring area). Plotting lines of equal exceedances allows a better understanding of the frequency in hours that odors are predicted to exceed the fenceline limit of 5 D/T, and illustrates the odor impact, areas, and plume trajectory. For clarity, only the 88-hour exceedance lines (99 percent compliance) are shown. Note, the red isopleth line pertains to the indicative design HW3 location and the yellow line pertains to the near EBOS location for HW3. Both lines remain within the fence line boundary, indicating compliance.

Figure 8-3. Comparison of Exceedance Isopleth Plots for both Indicative and EBOS HW3 Locations

8.2.2 HW2 Odor Control Inclusion in HW3 Scope

An evaluation was completed to determine whether HW2 would need to be mitigated to meet offsite odor limits under the scenario in which HW3 is treated and located near EBOS. This was deemed necessary to determine whether HW2 odor control would be included in the scope of this Project. If included, two treatment options were considered viable: (1) a centralized odor control system for treating both HW2 and HW3 with extended duct lengths, or (2) stand-alone odor control systems located at each facility. To assist with this evaluation, multiple model scenarios were run, as summarized in Table 8-2. Table 8-2 also indicates which scenarios meet the required offsite odor limit stipulated herein. Note, scenarios that include dispersion fans (Scenarios 5 and 6) include fans that discharge to stacks. However, they do not include induction stacks in which dilution air is mixed with stack air flows.

Table 8-2. HW2 Odor Control Model Scenario Summary

San José WRF Headworks No. 3

Scenario	Source					Meets Offsite Limits?		Comments
	HW2	HW3	Dewatering	EOB	Rest of RWF	Yes	No	
1								
1a	ON	ON	ON	EMPTY	ON	✓		HW3 Open Bins/Conveyor[a]
1b	ON	ON	ON	EMPTY	ON	✓		HW3 Open Bins/Conveyor[b]
1c	ON	ON	ON	EMPTY	ON	✓		HW3 Open Bins/Conveyor[c]
1d	ON	ON	ON	FULL	ON		✓	HW3 Open Bins/Conveyor[a]

Table 8-2. HW2 Odor Control Model Scenario Summary

San José WRF Headworks No. 3

Scenario	Source					Meets Offsite Limits?		Comments
	HW2	HW3	Dewatering	EOB	Rest of RWF	Yes	No	
2	OFF	ON	ON	EMPTY	ON	✓		HW3 Open Bins/Conveyor[a]
3	ON	ON	OFF	EMPTY	ON		✓	HW3 Open Bins/Conveyor[a]
4	OFF	ON	OFF	EMPTY	ON		✓	HW3 Open Bins/Conveyor[a]
5	PARTIAL	ON	OFF	EMPTY	ON		✓	HW3 Open Bins/Conveyor[a]
6	PARTIAL	ON	ON	EMPTY	ON		✓	HW3 Open Bins/Conveyor[a]

[a]Odor strength of 2,000 D/T
[b]Odor Strength of 5,000 D/T
[c]Odor Strength of 10,000 D/T

Notes:

OFF = no odor control provided
ON = odor control provided
PARTIAL = dispersion fans/stacks only

The term “rest of RWF” in Table 8-2 refers to the following plant sources:

- Future odor control serving East Primary Clarifiers (including influent channel, quiescent zones, and weirs)
- Primary Effluent Equalization Basin (PEPS EQ)
- Biological Nutrient Removal (BNR) 1 and BNR 2 Aeration Basins
- BNR Secondary Clarifiers
- Dissolved Air Flotation Technology (DAFT)
- Scum Scrubber Stack
- California Structure
- Filter Backwash Basin
- Digester 10 Pressure Release Valve (450,000 D/T with an emission rate of 1,000 odor units per second [OU/s])

Model emission input values for these sources are beyond the scope of this document; refer to the previous Study (CH2M, 2015) for details pertaining to them.

Key model result findings are summarized as follows:

- Scenarios 1a through 1d: Open bins and a conveyor result in negligible offsite odor impacts, regardless of odor strength modeled (Table 8-2). This is mainly due to the relatively small plume associated with these open sources.
- Scenario No. 1d: A full emergency basin results in significant offsite odor impacts. However, this condition is expected to be very infrequent (that is, is likely to meet 99 percent compliance)
- Scenario No. 2: With HW2 untreated, and all other sources treated, the offsite odor limit is met (Figure 8-6).
- Scenarios No. 3 and 4: The dewatering source without treatment does not meet the offsite odor limit. In short, odor mitigation at HW3 cannot stand in or make up for odor control at dewatering.
- Scenario No. 5: Partial treatment at HW2 with 30-foot-tall dispersion stack results in worse offsite odor impacts than no treatment of HW2. This is because the 13,500-cubic-feet-per-minute (cfm) from the dispersion stack results in a greater emission rate versus an open source with a small flux rate emitted from the surface. A taller stack or perhaps an induction stack would improve offsite impacts.

Figure 8-4 provides an isopleth plot for Scenario 1c in which HW2 is treated, open bins are modeled at HW3 at an odor strength of 10,000 D/T, and all other sources are treated. As illustrated, the offsite odor limit is met for this condition.

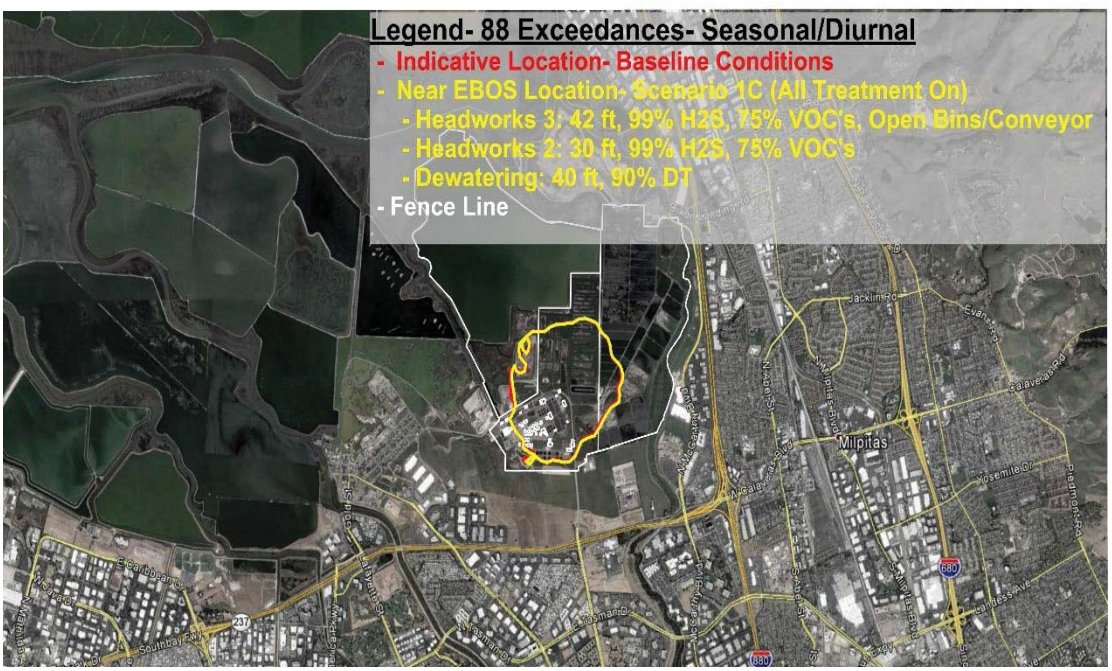

Figure 8-4. Model Scenario 1c Isopleth Plot with HW2 Treated and all other Sources Treated

Figure 8-5 provides an isopleth plot for Scenario 1d in which HW2 is treated, EOB is full, and all other sources are treated. As illustrated, the offsite odor limit is not met for this condition.

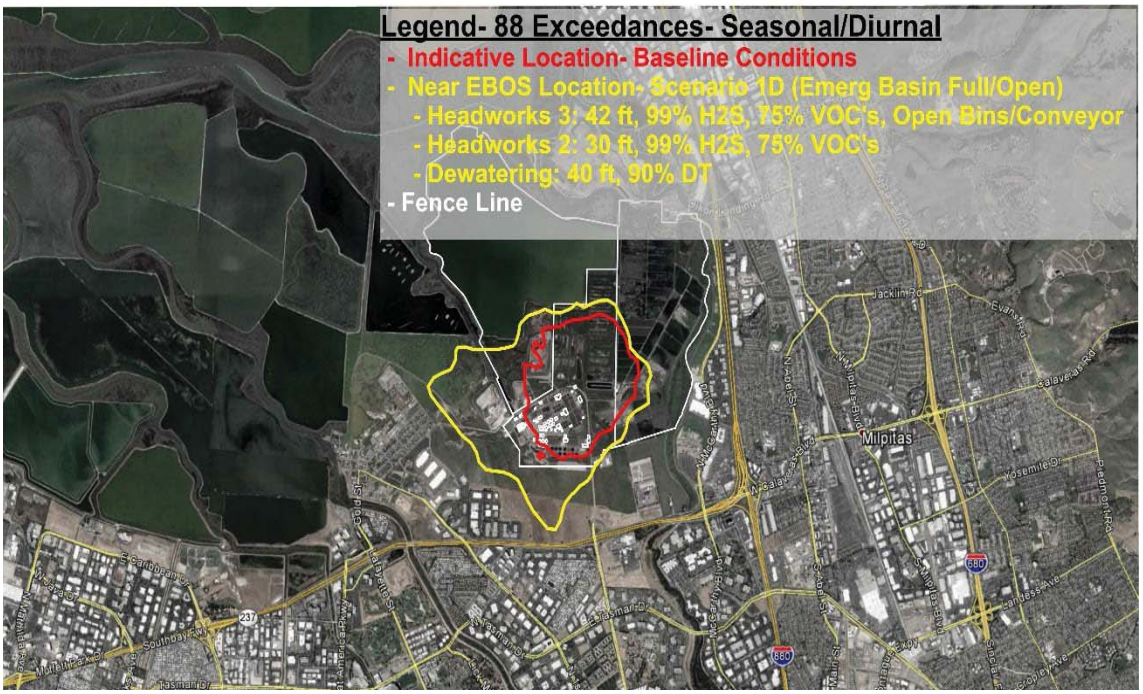

Figure 8-5. Model Scenario 1d Isopleth Plot with HW2 Treated, EOB Full, and all other Sources Treated

Figure 8-6 provides an isopleth plot for Scenario 2 in which HW2 is untreated and all other sources are treated. As illustrated, the offsite odor limit is met for this condition.

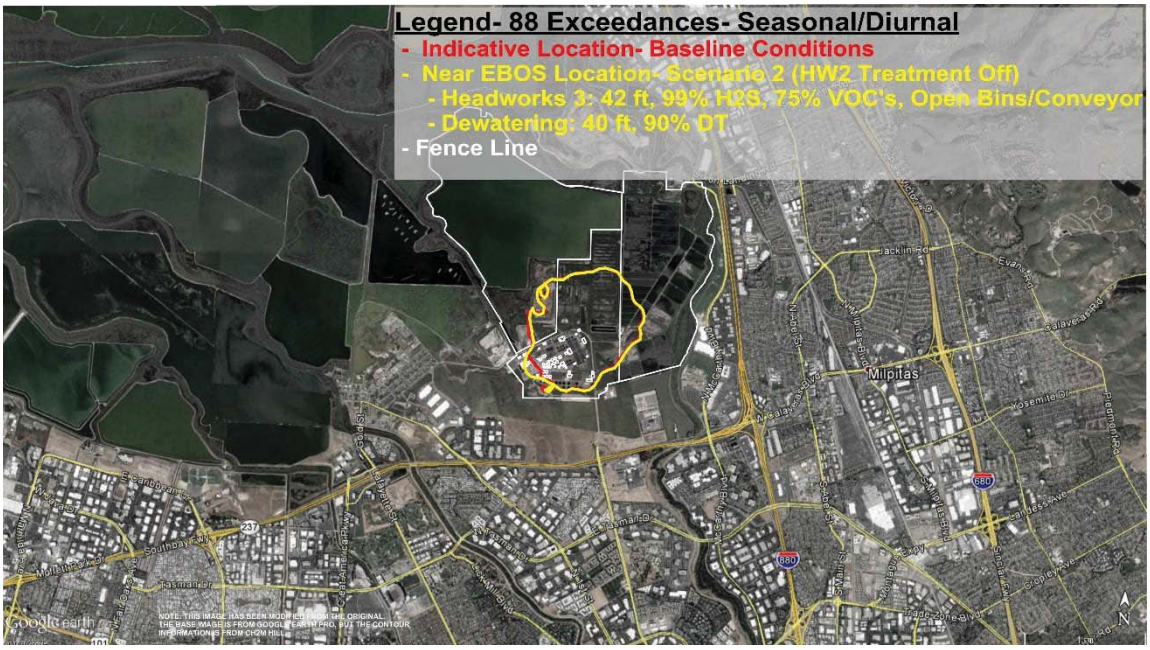

Figure 8-6. Model Scenario 2 Isopleth Plot with HW2 Untreated and all other Sources Treated

Figure 8-7 provides an isopleth plot for Scenario 3 in which HW2 is treated, dewatering is not treated (dispersion fan only), and all other sources are treated. As illustrated, the offsite odor limit is not met for this condition.

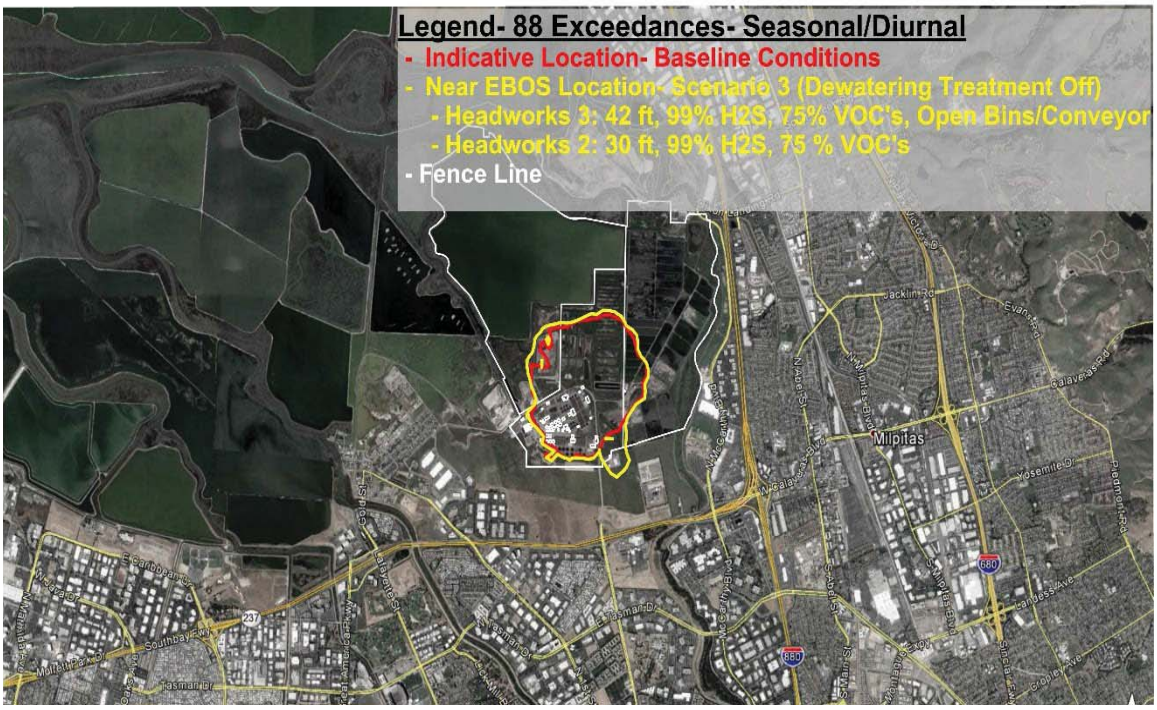

Figure 8-7. Model Scenario 3 Isopleth Plot with HW2 Treated, Dewatering Untreated, and all other Sources Treated

The isopleth plot for Scenario 4 looks essentially identical to that shown in Figure 8-7 for Scenario 3.

Figure 8-8 provides an isopleth plot for Scenario 5 in which HW2 is partially treated, Dewatering is not (dispersion fan only), and all other sources are treated. As illustrated, the offsite odor limit is not met for this condition.

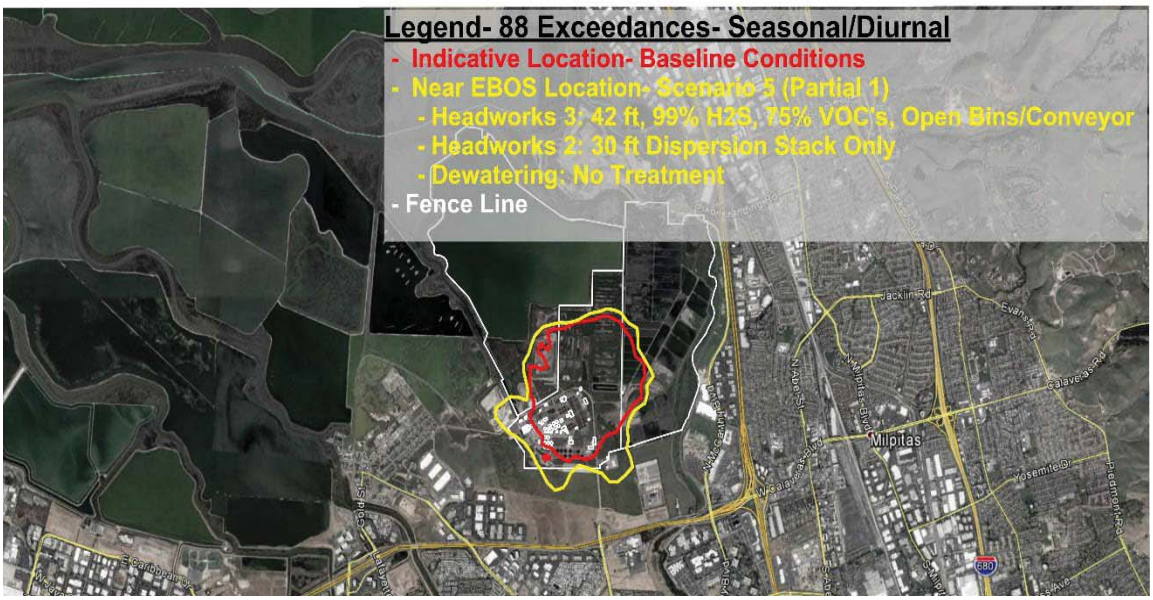

Figure 8-8. Model Scenario 5 Isopleth Plot with HW2 Partially Treated, Dewatering Untreated, and all other Sources Treated

Figure 8-9 provides an isopleth plot for Scenario 6 in which HW2 is partially treated and all other sources are treated. As illustrated, the offsite odor limit is not met for this condition.

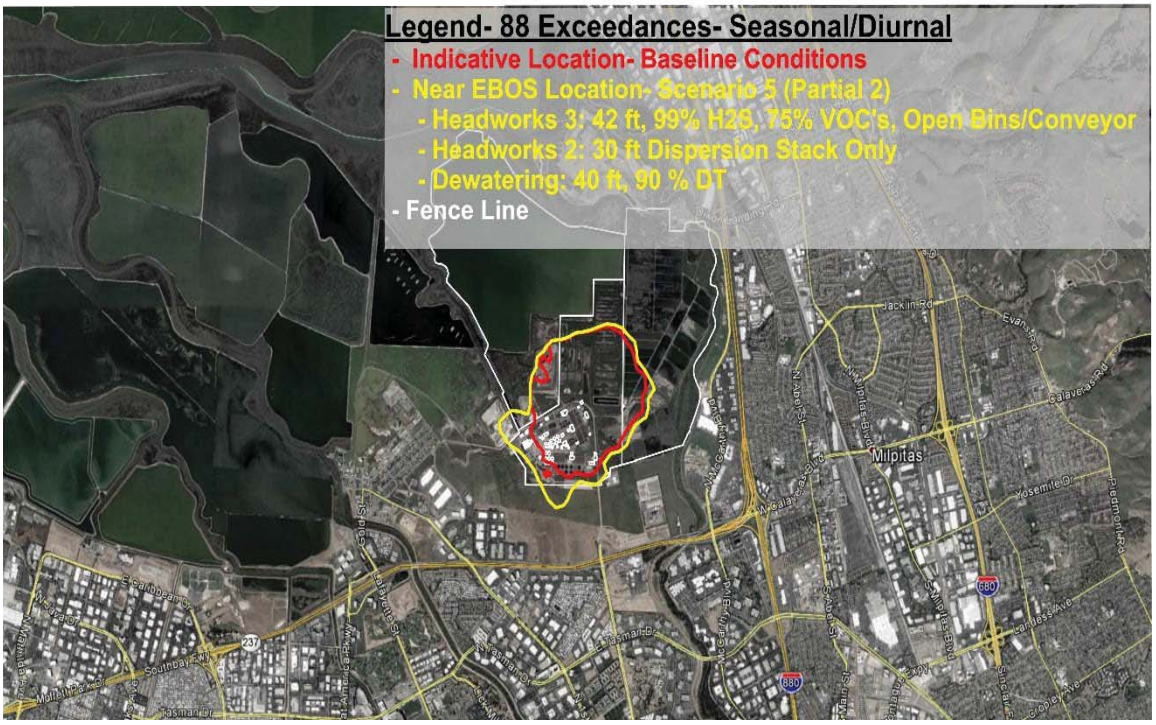

Figure 8-9. Model Scenario 6 Isopleth Plot with HW2 Partially Treated and all other Sources Treated

Table 8-3 summarizes tabulated offsite odor impacts for each scenario. Note, H_2S is not included since offsite H_2S impacts are generally much less than D/T.

Table 8-3. Tabulation of Offsite Odor Impacts for All Scenarios
San José WRF Headworks No. 3

Scenario	Maximum Offsite D/T[a]	Maximum Number of Hourly Exceedances > 5 D/T[a]
Scenario 1a	17	49
Scenario 1b	17	49
Scenario 1c	17	49
Scenario 1d	157	2,552
Scenario 2	17	49
Scenario 3	17	562
Scenario 4	17	558
Scenario 5	25	622
Scenario 6	25	203
[a] Based on 2010 meteorological data		

Based on the modeling, it was concluded that HW2 odor mitigation could be deferred to the future, as necessary, depending on actual operating modes and odor emissions observed at HW2. Note, deferring odor control at HW2 may result in exacerbated corrosion at that facility. A corrosion assessment will be conducted to verify existing conditions and confirm the decision to defer odor control.

8.3 Design Codes and Standards

The following design codes and standards will be adhered to related to the odor control design:

- California Mechanical Code (CMC) (2016)
- California Plumbing Code (CPC) (2016)
- California Fire Code (CFC) (2016)
- Sheet Metal and Air Conditioning Contractor National Association (SMACNA) Handbooks
- NFPA 820 (NFPA, 2016)
- Other NFPA Recommended Practices and Manuals, as applicable
- California Department of Health and Safety (Cal/OSHA) Title 8 Regulation
- San José-Santa Clara (SJ-SC) RWF Architectural Design Guidelines Version 10-20-2015 (City, 2015)

8.4 Design Criteria

This section summarizes the design criteria associated with the odor control system serving HW3.

8.4.1 General

The previous PDR (CDM Smith, 2017a) provided the following odor control design criteria:

- HW3: The BTF was sized for 12,000 cfm with a footprint of 35 feet by 20 feet. This footprint pertains to the concrete pad that the cylindrical vessel, fan(s), ducting, nutrient feed system, and other ancillary equipment would be housed
- HW2: The granular activated carbon (GAC) scrubber was sized for 12,000 cfm with a footprint of 20 feet by 25 feet.

These criteria have been revised per this BDR as follows:

- HW3: The BTF is now sized for 9,400 cfm (see ventilation criteria herein).

  Ventilation criteria have been slightly relaxed based on City feedback. The reduced ventilation criteria are favorable as they result in lower cost (capital expenditure [CAPEX] and operational expenditure [OPEX]), as well as a smaller footprint. The selected ventilation criteria will ensure good odor containment and appropriate headspace dilution to reduce corrosion potential. However, in some cases the selected ventilation criteria will not meet NFPA 820 requirements for reduction in space electrical classification (NFPA, 2016).

- HW2: Odor control is not included in the HW3 scope, as described herein.

A corrosion engineer will assess the condition of HW2 and a decision will be made regarding corrosion mitigation schemes required to be implemented at HW2.

8.4.2 Key Odor Sources

The following key odor sources are associated with HW3:

- Headworks Channels: The expected odor strength from this source is high with RS.
- Grit Tanks: The expected odor strength from this source is high with RS.
- Grit Classifiers: The expected odor strength from these units is moderate.
- Screenings Sluiceway and Washer: The expected odor strength from these sources is moderate.
- Grit Dumpsters: Dumpsters are expected to be open; since grit washing will be provided, most organics should be removed, making this source less offensive than other HW3 sources.
- Screenings Dumpsters: Dumpsters are expected to be open; since sluiceway will provide some washing of screenings, this source should be less offensive than other HW3 sources.
- Septage Receiving: This source is expected to exhibit very strong odors; however, when the septic hauler hooks up to the station, the connection is expected to be contained; odors will be extracted for treatment.

  Septage receiving will be provided with multiple direct-connect locations similar to existing ones (that is, a hole in which a hose is dropped from the truck). The annular space between the hose and the hole opening will be small. This, coupled the headspace below the opening being maintained at a negative pressure via the odor control system, will ensure the septage unloading activities will generally exhibit good containment.
- RS Wetwell: The expected odor strength from this source is high with RS.

The following key odor sources are not currently associated with HW3 but may be added to the HW3 odor control system in the future:

- EBOS (including centrate influent and associated ammonia)
- EOB

Covering the EOB with a rigid suspended cover would be cost-prohibitive and potentially unviable due to structural limitations and cover type. Floating covers exist but pose other challenges including longevity, air extraction, and dealing with floatables.

8.4.3 Ventilation/Odor Loadings

Recommended ventilation rates for sizing the HW3 odor control ystem will comply with NFPA 820 (NFPA, 2016) (where applicable and where space classification reduction is necessary) and best' engineering design practice for similar type facilities. In general, ventilation rates will meet the following objectives:

- Provide adequate ventilation to protect maintenance personnel within occupied spaces per latest version of NFPA 820 (NFPA, 2016).

- Maintain a minimum negative pressure of 0.1-inch water column (WC) within wastewater channels and holding tanks to contain odors under the following conditions:
  - Dynamic liquid level changes
  - Estimated crack openings in covers treated as sharp-edged orifices
- When a single access cover is removed, maintain sufficient velocities across the opening to prevent fugitive odors.
- Provide adequate turnover rate and air scavenging within channels to reduce corrosion resulting from H_2S pockets.

As defined in the previous Study (CH2M, 2015), the average raw wastewater H_2S concentration was estimated based on a 2040 flow of 139 mgd times 0.22 milligrams per liter (mg/L) of dissolved sulfide stripped. This resulted in a H_2S concentration of approximately 35,000 parts per billion volume (ppbv). Assuming a correspondence of 1 ppbv to 1 D/T, the stripped H_2S concentration corresponds to 35,000 D/T. To be sufficiently conservative, it was assumed that the average H_2S concentration could range from 35 to 70 parts per million (ppmv). A peak-to-average ratio of 6 to 1 was determined from the primary clarifier inlet channel OdaLog sampling results. This factor was assigned to both odor and H_2S, resulting in peak values of 210,000 D/T and 210 ppmv H_2S, respectively. Other HW3 sources (including grit classifiers, the screenings sluice and washer, grit dumpsters, and screenings dumpsters) were assigned odor concentrations based on a comprehensive in-house database.

Table 8-4 summarizes ventilation criteria, along with odor loadings for all key sources associated with HW3.

Table 8-4. HW3 Foul Air Flow Rates, Odor Concentrations, and Sizing Summary
San José WRF Headworks No. 3

Source	Odor Concentration	Air Flow (cfm)	Air (ACH)	Sizing Criteria Summary
Headworks Channels	H_2S: • 35 ppm (average) • 210 ppm (peak) D/T: • 35,000 (average) • 210,000 (peak)	1,700	>6	Flow rate necessary to: (1) maintain a negative 0.1-inch WC within channels under normal operating conditions, (2) outrun any frictional drag natural ventilation flows from upstream, (3) maintain high capture velocity of >200 fpm across open access hatches, and (4) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
Grit Basins	H_2S: • 35 ppm (average) • 210 ppm (peak) D/T: • 35,000 (average) • 210,000 (peak)	3,230	>6	Flow rate necessary to: (1) maintain a negative 0.1-inch WC within basins under normal operating conditions, (2) maintain high capture velocity of >200 fpm across open access hatches, and (3) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
RS Wetwell	H_2S: • 35 ppm (average) • 210 ppm (peak)	2,320	>6	Flow rate necessary to: (1) outpace frictional drag airflows from upstream influent pipe, (2) maintain a negative 0.1-inch WC within wet well under normal operating conditions, (3) maintain high capture velocity of >200 fpm across open

Table 8-4. HW3 Foul Air Flow Rates, Odor Concentrations, and Sizing Summary
San José WRF Headworks No. 3

Source	Odor Concentration	Air Flow (cfm)	Air (ACH)	Sizing Criteria Summary
	D/T: • 35,000 (average) • 210,000 (peak)			access hatches, and (4) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
Grit Classifiers	H_2S: • 2 ppm (average) • 10 ppm (peak) D/T: • 2,000 (average) • 10,000 (peak)	610	>20	Flow rate necessary to: (1) maintain a negative 0.1-inch WC within enclosure under normal operating conditions, (2) maintain high capture velocity of >200 fpm across open access hatches, and (3) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
Screenings Sluiceway and Washers	H_2S: • 5 ppm (average) • 20 ppm (peak) D/T: • 5,000 (average) • 20,000 (peak)	300	>20	Flow rate necessary to: (1) maintain a negative 0.1-inch WC within enclosure under normal operating conditions, (2) maintain high capture velocity of >200 fpm across open access hatches, and (3) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
Septage Receiving	H_2S: • 35 ppm (average) • 210 ppm (peak) D/T: • 35,000 (average) • 210,000 (peak)	600	>6	Flow rate necessary to: (1) maintain a negative 0.1-inch WC, (2) outrun any frictional drag natural ventilation flows, (3) maintain high capture velocity of >200 fpm across open access hatches, and (4) prevent pockets of corrosive H_2S from accumulating by creating adequate scavenging velocities (~25 fpm)
Grit Dumpsters	H_2S: • 1 ppm (average) • 5 ppm (peak) D/T: • 1,000 (average) • 5,000 (peak)	710[a]	>20	Flow rate necessary to maintain a negative 0.1-inch WC
Screenings Dumpsters	H_2S: • 2 ppm (average) • 15 ppm (peak) D/T: • 2,000 (average) • 15,000 (peak)	520[b]	>20	Flow rate necessary to maintain a negative 0.1-inch WC

[a] Based on two dumpsters, 8 feet x 22 feet in size.
[b] Based on two dumpsters, 8 feet x 16 feet in size.

Note:
ACH = air change(s) per hour

Note, frictional drag air flows entering the RS wetwell are expected to be infrequent and intermittent, since the 120-inch-diameter pipe upstream will be surcharged a large percentage of the time.

As Table 8-4 indicates, equipment including grit classifiers, screening sluiceways, and dumpsters has been assigned higher turnover rates (>20 ACH) than other areas. This is because these sources exhibit a greater potential for leakage and fugitive odors, especially since they include hatches or hinged covers. Because their respective volumes are relatively small, increasing ACH values provides great benefit with minimal cost and prevents or limits fugitive odors due to leaks or open hatches/covers.

If deemed necessary, the pre-approval of manufacturers can be discussed with the City.

8.4.4 Odor Removal Performance Requirements

The following guaranteed odor removal efficiencies are required for the HW3 odor control system:

- H_2S: 99 percent or 0.1 ppm, whichever is greater
- D/T: 90 percent or 500 D/T, whichever is greater
- Organic Sulfur VOCs: 75 percent

These performance criteria are achievable by standard BTF equipment serving similar applications, and represent typical supplier performance guarantees.

Note, the performance criteria listed in Section 8.1.2 matches the previous Study (CH2M, 2015) criteria. This was intentional to ensure the evaluation of HW3 aligned with the modelling conducted during the previous Study (CH2M, 2015). The criteria listed in Section 8.4.4 are different and reflect industry standard values as confirmed by reaching out to two major suppliers (Bioair and ECS); both of which confirmed these criteria could be met at an empty bed gas residence time of 14 seconds.

Future extraction and treatment from EBOS must account for centrate flows and ammonia emissions. Preliminary calculations of ammonia mass-loading indicate centrate ammonia loadings will have negligible impact; therefore, ammonia is not a target constituent for this source.

8.4.5 Discharge Stack

The following criteria will be incorporated where stacks will be integral to the odor control system:

- Stack diameters will be sized to maintain a minimum exit velocity of 3,000 feet per minute (fpm), so adequate dilution will be induced through the mixing of plume gases with fresh outside air to minimize offsite odor impacts.
- To the extent possible, stack locations and heights will be such that stacks will extend above local recirculation zones and upwind and downwind obstacles. In addition, stacks will be located to prevent stack discharge gases from re-entering occupied spaces through intake louvers and openings.
- Stacks will be uncapped to allow a full vertical exhaust jet. Rainwater will be drained at the bottom of the stack.

8.4.6 Noise Reduction

Odor control exhaust fans without noise control are expected to produce sound pressure ratings in the range of 85 to 100 dBA within 5 feet from the unit. These levels will pose concerns to operators due to Cal/OSHA limits. In addition, these levels will likely result in excessive ambient noise levels at nearby residences and public roadways if not abated. It is expected that noise levels from fans will require a 25- to 45- dB reduction. The preliminary design is based on fans equipped with acoustical enclosures. The final noise reduction requirements are to be determined during final design. Section 2, Overall Project Design Basis, provides additional information on the noise restrictions at the site.

8.4.7 Reliability/Redundancy

The odor control system will include the following reliability/redundancy features:

- Fans: Two fans will be provided in parallel; one duty and one standby.
- BTF Towers: A single tower will be provided initially with space provided for a future second tower if or when EBOS odor control is provided, or if or when other adjacent sources are to be treated.

  The second future BTF tower is expected to be capable of treating loads from centrate entering EBOS. The expected ammonia loading will be low, and therefore should not pose a problem with shifting of microbe colonies and subsequent reduction in sulfur removal performance.
- Controls: Controls will match equipment redundancy. In short, single-duty instruments will be provided for each piece of equipment. In the future, if a second BTF tower is provided, there will be controls dedicated to that tower, resulting in an equivalent redundancy as the major tower equipment.
- Future Second Stage: Space has been included on the site for the addition in the future of carbon polishing if needed based on either: (1) BTF underperformance, or (2) more stringent offsite odor limits.

8.5 Alternatives

The previous Study (CH2M, 2015) evaluated multiple technologies considered viable for serving HW3. That evaluation included a multi-criteria comparison including both net present value (NPV) and nonfinancial criteria rankings. The following technologies and technology combinations were evaluated for serving the headworks:

- Biofilter (with engineered media)
- Biotower (that is, BTFs)
- Single-stage chemical scrubber plus carbon
- Biotower plus carbon

The evaluation resulted in both the biofilter option and the BTF option receiving roughly equivalent nonfinancial rankings. Similarly, both options were considered equivalent from a NPV standpoint, based on the level of accuracy associated with the concept-level cost estimate. However, BTF was ultimately selected primarily due to its ability to handle and treat elevated inlet H_2S concentrations exceeding 100 ppmv effectively. Biofilters, while capable of handling elevated inlet H_2S levels when designed correctly, are generally considered most viable for

applications where inlet H_2S levels fall to less than 50 ppmv. Depending on the media type and specific design features, biofilters can experience biomass plugging under heavy H_2S loadings.

Figure 8-10 illustrates the nonfinancial and NPV comparisons for the viable technologies considered for serving the headworks. This figure was extracted directly from the previous Study (CH2M, 2015) (the original figure reference is Figure 10-3 within that document).

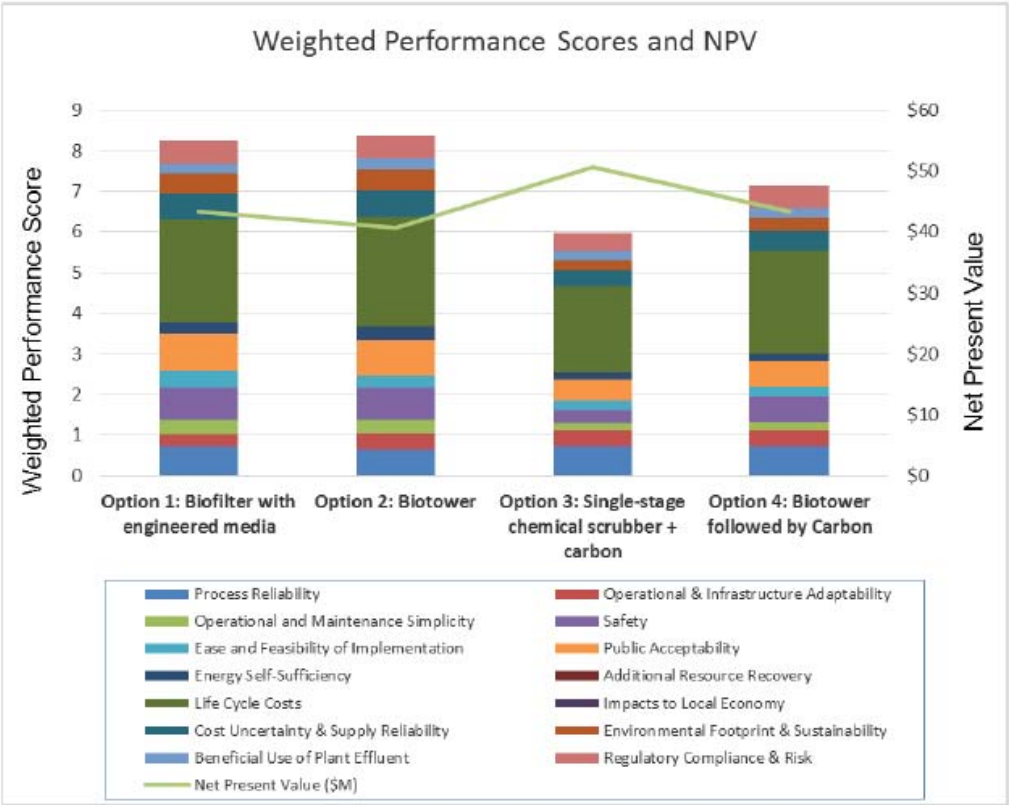

Figure 8-10. Weighted Performance Scores and NPV (without escalation) for Headworks

Although OdaLog data collected at the East Primaries as part of the previous Study (CH2M, 2015) indicated peak H_2S values less than 100 ppmv, the City has confirmed H_2S concentrations at both headworks and primaries periodically exceed 100 ppmv. Therefore, although the new location near EBOS would allow available real estate for implementing a biofilter technology, the greater expected inlet odor concentrations makes the BTF technology a better choice.

BTF technology has therefore been selected for moving forward into design for serving HW3.

8.6 Basis of Design

This section provides detailed basis of design parameters for the selected HW3 odor control system.

8.6.1 General

The odor control system serving the HW3 facility will comply with the basis of design criteria summarized in Table 8-5.

Table 8-5. Basis of Design Criteria – HW3 Odor Control System
San José WRF Headworks No. 3

Description	Criteria
BTF	
Inlet H_2S	35 ppm (average); 210 ppm (peak)
Inlet D/T	35,000 D/T (average); 210,000 D/T (peak)
Inlet Organic Sulfur VOCs	< 5 ppm (aggregate)
Minimum Performance Criteria, H_2S	For inlet concentrations > 10 ppmv, 99% removal For inlet concentrations < 10 ppmv, outlet concentration ≤100 ppbv
Minimum Performance Criteria, D/T	For inlet concentrations >5,000 D/T, 90% removal For inlet concentrations <5,000 D/T, outlet concentration ≤500 D/T
Facility Served	HW3
Number of Vessels (initial)	One
Configuration	Vertical, countercurrent
Diameter and Height	12 foot, 35 feet
Capacity and Pressure Drop	9,400 cfm @ 3 inches WC
Media Depth	20 feet
Media Type	Synthetic, structured
Contact Time	15 seconds (minimum)
Bed Velocity	83 fpm
Access to Top of Vessel	Ladder with platform
Stack size	24-inch-diameter
Stack Exit Velocity	3,000 fpm
Makeup Water Type[a]	W3 with W1 backup
Makeup Water and Demand	Treated Plant Effluent (if available) @ 10,000 gpd
Makeup Water Operation	Intermittent (automatic through water control panel)
Odorous Air Exhaust Fan	Type: FRP Centrifugal Capacity: 9,400 cfm @ 8.0 inches WC
Number of Units	2 (one duty, one standby)
Type	FRP, centrifugal
Capacity	9,400 cfm
Static Pressure	8 inches WC
Motor Size	25 hp
Motor Type	TEFC (Class 1, Division 2)
Arrangement Type	1
Configuration	Bottom horizontal discharge
Drive Type	Variable Speed (belt driven)
Seal Type	Teflon (Labyrinth)

Table 8-5. Basis of Design Criteria – HW3 Odor Control System
San José WRF Headworks No. 3

Description	Criteria
Accessories	Seismic base Scroll drain Housing door Weather enclosure Extended lube line Noise mitigation (housing wrap or enclosure)
Controls	Differential pressure indicator (fan) Differential pressure indicator (BTF) Sump level indicator (BTF)
[a] W3 quality needs to be confirmed to verify if suitable for makeup water Notes: FRP = fiberglass-reinforced plastic TEFC = totally enclosed, fan-cooled	

W3 makeup water should meet the following water quality requirements:

- pH: 6.0 – 8.0
- Temperature (min/max): 15 – 37 degrees C
- Biological Oxygen Demand (BOD): < 30 mg/L
- Total Nitrogen (N_{tot}): 2-20 mg/L
- Total Phosphate (P_{tot}): 1-5 mg/L
- Chlorine: < 5 ppm
- Total Suspended Solids (TSS): < 10 mg/L
- Salts: < 2,000 ppm
- Hardness: < 400 mg/L $CaCO_3$

W3 water quality will be verified during the next design phase.

8.6.1.1 Manufacturers

Table 8 lists some reputable equipment manufacturers associated with odor control systems pertinent to HW3.

Table 8-6. Equipment Manufacturers

Equipment	Manufacturers
BTF	Bioair
	ECS
	Ecoverde
	Evoqua

Table 8-6. Equipment Manufacturers

Equipment	Manufacturers
Odor Extraction Fans	Verantis
	New York Blower
	Hartzell

8.6.2 Process and Control Approach

A pressure-differential indicating transmitter (PDIT) serving the odor control exhaust fan and a second PDIT serving the tower will send a signal directly to supervisory control and data acquisition (SCADA) system for indication and alarm. The fan status will be monitored via PDIT in compliance with NFPA 820 (NFPA, 2016). The SCADA system will calculate foul air flow based on fan speed (via variable frequency drives [VFDs]) and the fan PDIT.

APPENDIX D

Special-Status Species with Potential to Occur in the Study Area

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TABLE D-1
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Plants				
Astragalus tener var. *tener* Alkali milk-vetch	--/--/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay Area. Considered extirpated from Santa Clara County.	Alkali playas, on adobe clay in valley and foothill grassland, vernal pools on alkaline soils; below 60 meters above MSL. Blooms March - June	Low; may occur in the seasonal wetland located north of the Study area. Nearest extant occurrence is 4.5 miles north in Fremont. There is no suitable habitat within the study area.
Atriplex depressa Brittlescale	--/--/1B.2	Western and eastern Central Valley and adjacent foothills on west side of Central Valley.	Alkaline clay soils in chenopod scrub, playas, valley and foothill grasslands, meadows and seeps and vernal pools on alkaline, clay soils; below 320 meters above MSL. Blooms April - October	Low; may occur in the grasslands or seasonal wetlands within the study area.
Atriplex joaquiniana San Joaquin spearscale	--/--/1B.2	West edge of Central Valley from Glenn County to Tulare County. Also reported from Monterey and San Luis Obispo Counties.	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland; below 835 meters above MSL. Blooms April - September	Low; may occur in the grasslands or seasonal wetlands within the study area.
Atriplex minuscula Lesser saltscale	--/--/1B.1	Sacramento and San Joaquin Valley, Butte County and from Merced County to Kern County. Also recorded from Don Edwards NWR in Alameda County.	Sandy alkaline soils in chenopod scrub, playas, valley and foothill grassland; 15-200 meters above MSL. Blooms May - October	Low; may occur in the grasslands or seasonal wetlands within the study area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--/--/1B.1	East San Francisco Bay Area, Salinas Valley, Los Osos Valley.	Alkaline soils in annual grassland, on lower slopes, flats, and swales, sometimes on saline soils; below 230 meters above MSL. Blooms May - October	Moderate; the species is documented in alkali grassland in the western portion of the study area. Suitable habitat for this species does occur in the Soil Disposal portion of study area. Reconnaissance surveys for this species conducted during the blooming period for the Iron Salts project, were negative. Since then, that area has been exposed to routine disturbance by Facility operations. ESA's Alternatives Constraints Analysis reconnaissance surveys for the Project for Congdon's tarplant in August 2016 and the Project's wetland delineation in August 2017 confirmed absence of the species.

TABLE D-1 (Continued)
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Plants (cont.)				
Chorizanthe robusta var. *robusta* Robust spineflower	E/--/1B.1	Coastal central California, from San Mateo to Monterey County.	Coastal bluff scrub, coastal dunes openings in cismontane woodland, on sandy soil. Blooms April - September	Absent; there is no suitable habitat within the study area.
Chloropyron maritimum ssp. *palustre* Point Reyes bird's-beak	--/--/1B.2	Coastal northern California, from Humboldt to Santa Clara County, though presumed extirpated from Santa Clara County.	Coastal salt marsh, tidal salt marsh; below 10 meters above MSL. Blooms June - October	Absent; there is no suitable habitat within the study area.
Eryngium aristulatum var. *hooveri* Hoover's button-celery	--/--/1B.1	South San Francisco Bay area, South Coast Ranges in Alameda, San Benito, Santa Clara, and San Luis Obispo Counties, though presumed extirpated from Santa Clara County.	Vernal pools; 3-45 meters above MSL. Blooms June - August	Low; may occur in the seasonal wetlands within the study area.
Lasthenia conjugens Contra Costa goldfields	E/--/1B.1	Scattered occurrences in Coast Range valleys and southwest edge of Sacramento Valley, Alameda, Contra Costa, Monterey, Marin, Napa, Solano and Sonoma Counties. Presumed extirpated in Mendocino, Santa Barbara and Santa Clara Counties.	Wet areas in cismontane woodland, valley and foothill grassland, vernal pools, alkaline playas or saline vernal pools and swales; seasonal wetlands below 470 meters above MSL. Blooms March - June	Low; there is no suitable habitat within the study area.
Malacothamnus arcuatus arcuate bush-mallow	–/–/1B.2	Santa Clara, Santa Cruz, and San Mateo Counties.	Chaparral, between 15-355 meters above MSL. Blooms April - September	Absent; there is no suitable habitat within the study area.
Navarretia prostrata Prostrate vernal pool navarretia	--/--/1B.1	Western San Joaquin Valley, interior South Coast Ranges, central South Coast, Peninsular Ranges: Alameda, Los Angeles, Merced, Monterey, Orange, Riverside, San Diego, and San Luis Obispo Counties.	Vernal pools and mesic areas in coastal scrub and alkali grasslands, seasonal wetlands in alkaline soils; between 15-700 meters above MSL. Blooms April - July	Low; may occur in the seasonal wetlands in the study area.
Suaeda californica California seablite	E/--/1B.1	Morro Bay, San Luis Obispo County, and San Francisco and Contra Costa Counties; historically found in the south San Francisco Bay.	Margins of tidal salt marsh; below 15 meters above MSL. Blooms June - October	Absent; there is no suitable habitat within the study area.
Trifolium hydrophilum *(T. depauperatum* var. *hydrophilum)* Saline clover	--/--/1B.2	Sacramento Valley, central western California.	Salt marsh, mesic alkaline areas in Valley and foothill grasslands, vernal pools, marshes and swamps; below 300 meters above MSL. Blooms April - June	Low; may occur in the seasonal wetlands surrounding study area. Nearest documented occurrence is in Alviso, ~ 1-mile away.

TABLE D-1 (Continued)
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Invertebrates				
Euphydryas editha bayensis Bay checkerspot butterfly	T/--	Disjunct occurrences in San Mateo and Santa Clara Counties.	Associated with specific host plants that typically grow on serpentine soils.	Absent; there is no suitable habitat for this species, as there are no serpentine soils in the study area.
Lepidurus packardi Vernal pool tadpole shrimp	E/--	Shasta County south to Merced County.	Vernal pools and ephemeral stock ponds.	Absent; there is no suitable habitat in the study area.
Amphibians				
Ambystoma californiense California tiger salamander	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Sonoma County south to Santa Barbara County.	Small ponds, lakes, or vernal pools in grasslands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.	Low; suitable habitat occurs in the annual grassland within the study area and suitable breeding habitat occurs in seasonal wetlands that inconsistently pond for a short period of time annually; however the nearest documented occurrence of this species is 4.5 miles away from the study area near Albrae.
Rana draytonii California red-legged frog	T/SSC	Found along the coast and coastal mountain ranges of California from Mendocino County to San Diego County and in the Sierra Nevada from Butte County to Stanislaus County.	Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods.	Low; may occur in the drainages of the study area on a transient basis. There is no high-quality suitable breeding habitat in the study area.
Reptiles				
Emys marmorata Western pond turtle	–/SSC	The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests. Nests are typically constructed in upland habitat within 0.25 mile of aquatic habitat.	Low; may occur in the vicinity of the drainages of the study area on a transient basis; however, there is no high-quality suitable breeding habitat in the study area.
Mammals				
Reithrodontomys raviventris Salt marsh harvest mouse	E/E	The San Francisco Bay Estuary and Suisun Marsh.	Saline to brackish salt marsh habitat. Pickleweed is primary habitat.	Low; known to use the salt marsh and salt panne habitats within the greater Facility grounds; however, there is no suitable habitat in the study area.

TABLE D-1 (Continued)
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Mammals (cont.)				
Sorex vagrans halicoetes Salt-marsh wandering shrew	-/SSC	Southern arm of the San Francisco Bay in San Mateo, Santa Clara, Alameda, and Contra Costa Counties.	Salt marshes from 6 to 9 feet above mean sea level (MSL).	Absent; there is no suitable habitat in the study area.
Birds				
Agelaius tricolor Tricolored blackbird	--/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony.	Low (foraging only); may occur over the study area on a transient basis. There is no suitable nesting habitat in the study area.
Aquila chrysaetos Golden eagle	--/CFP	Foothills and mountains throughout California. Uncommon non-breeding visitor to lowlands such as the Central Valley.	Nest on cliffs and escarpments or in tall trees overlooking open country. Forages in annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals.	Low (foraging only); may occur over the study area on a transient basis. There is no high-quality suitable nesting habitat in the study area.
Athene cunicularia hypugaea Western burrowing owl	--/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast.	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows.	High (foraging and breeding); western burrowing owl is known to forage and breed in the non-native grassland south and west of the study area. Burrowing owls were observed during the Facility BUOW surveys in 2015 (ESA, 2015).
Charadrius alexandrines nivosus Western snowy plover	T/SSC	Population defined as those birds that nest adjacent to or near tidal waters, including all nests along the mainland coast, peninsulas, offshore islands, and adjacent bays and estuaries. Twenty breeding sites are known in California from Del Norte to Diego County.	Coastal beaches above the normal high tide limit in flat, open areas with sandy or saline substrates; vegetation and driftwood are usually sparse or absent.	Absent; there is no suitable habitat in the study area.

TABLE D-1 (Continued)
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Birds (cont.)				
Circus cyaneus Northern harrier	--/SSC	Occurs throughout lowland California. Has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Moderate (foraging only); northern harrier is documented in the annual non-native grassland areas immediately south and west of the study area and has the potential to forage in the study area. Nest observed nearest study area documented at mouth of Coyote Creek, over 5 miles north of study area.
Elanus leucurus White-tailed kite	--/CFP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Low (foraging and nesting); white-tailed kite may forage in open grasslands within and adjacent to the study area. Suitable nesting habitat is present in the mature trees bordering roads of the study area.
Geothlypis trichas sinuosa Saltmarsh common yellowthroat	BCC/SSC	Found only in the San Francisco Bay Area in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda Counties.	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover.	Low; may occur over the Project on a transient basis. There is no suitable nesting habitat in the study area.
Laterallus jamaicensis coturniculus California black rail	--/T	Inhabits freshwater marshes, wet meadows & shallow margins of saltwater marshes bordering larger bays.	Require dense cover of upland vegetation for protection. Needs water depths of ~1 inch that do not fluctuate during the year & dense vegetation for nesting.	Low; no known nesting habitat in study area. Known to occur in the tidal marsh habitat found at Coyote Creek and Alviso Slough confluence and could migrate through the study area.
Melospiza melodia pusillula Alameda song sparrow	--/SSC	Found only in marshes along the southern portion of the San Francisco Bay.	Brackish marshes associated with pickleweed; may nest in tall vegetation or among the pickleweed.	Low; there is no suitable habitat in the study area.
Pelecanus occidentalis californicus California brown pelican	DL/DL/CFP	The Pacific coast from Canada through Mexico.	Coastal areas. Nests on islands.	Absent; may occur over the Project on a transient basis. There is no suitable habitat in the study area.
Rallus longirostris obsoletus Ridgway's (=California clapper) rail	E/CFP	Found along the Pacific Coast in Monterey and San Luis Obispo Counties.	From tidal mudflats to tidal sloughs. Associated with abundance grow of pickleweed. Feeds on invertebrates from mud-bottom sloughs.	Absent; may occur over the Project on a transient basis. There is no suitable habitat in the study area.

TABLE D-1 (Continued)
SPECIAL-STATUS PLANTS AND ANIMALS WITH POTENTIAL TO OCCUR IN THE STUDY AREA

Scientific and Common Names	Status Federal/ State/ CRPR	Geographic Distribution	Habitat Requirements	Potential Occurrence in Project Area
Birds (cont.)				
Sternula antillarum browni California least tern	E/E/CFP	Found along the Pacific Coast of California from San Francisco to Baja California.	Nest on open beaches kept free of vegetation by natural scouring from tidal action.	Absent; there is no suitable habitat in the study area.

NOTES:

Potential Occurrence in the study area:
High = Species is expected to occur and habitat meets species requirements.
Moderate = Habitat is only marginally suitable or is suitable but not within species geographic range.
Low = Habitat does not meet species requirements as currently understood in the scientific community.

California Rare Plant Rank (CRPR):
Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants presumed extirpated in California, but more common elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
Rank 3 = Plants about which we need more information – a review list
Rank 4 = Plants of limited distribution – a watch list

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

Status Codes:

Federal
E = listed as endangered under the ESA
T = listed as threatened under the ESA
BCC = United States Fish and Wildlife designated “birds of conservation concern”
DL = Delisted
– = no listing

State
E = listed as endangered under CESA
T = listed as threatened under CESA
SSC = California Department of Fish and Wildlife designated “species of special concern”
CFP = California Department of Fish and Wildlife designated “fully protected”
DL = Delisted
– = no listing

SOURCE: USFWS, 2019, CNPS, 2019, and CDFW, 2019.