DRAFT ENVIRONMENTAL IMPACT REPORT – Volume 2

Biosolids Digester Facilities Project

PLANNING DEPARTMENT
CASE NO. **2015-000644ENV**

STATE CLEARINGHOUSE NO. 2015062073

	Draft EIR Publication Date:	**May 3, 2017**
	Draft EIR Public Hearing Date:	**June 1, 2017**
	Draft EIR Public Comment Period:	**May 4, 2017 to June 19, 2017**

Written comments should be sent to:
Timothy P. Johnston, MP, Environmental Planner
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SAN FRANCISCO
PLANNING
DEPARTMENT

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CHAPTER 4 (continued)

Environmental Setting and Impacts

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4.10 Wind and Shadow

This section describes the existing wind and shadow environment in the project area and analyzes the potential for implementation of the Biosolids Digester Facilities Project (BDFP or project) to alter wind patterns and shadow patterns in a manner that would adversely affect outdoor recreational facilities or other public areas. Mitigation measures are identified to avoid or reduce adverse impacts, as appropriate.

4.10.1 Setting

4.10.1.1 Wind

Background

The difference in atmospheric pressure between two points on the earth causes air masses to move from the area of higher pressure to the area of lower pressure. This movement of air masses results in wind currents. The direction and speed of wind currents can be altered by natural features of the land or by buildings and structures. Groups of buildings clustered together tend to act as obstacles that reduce wind speeds. Building characteristics that can affect wind speeds include:

- ***Height.*** When a building is much taller than those around it, rather than a similar height, it can intercept and redirect winds downward that might otherwise flow overhead. The winds can be directed down the vertical face (or wall) of the building to ground level, and these redirected winds can be relatively strong and turbulent, particularly if such a wall includes no articulation.1 Based on a multitude of wind tunnel tests conducted for proposed buildings in San Francisco, buildings that are less than 80 feet tall typically do not result in substantial changes in ground-level winds.

- ***Massing.*** The massing of a building can affect wind speeds. In general, slab-shaped buildings have the greatest potential to accelerate ground-level winds, while buildings that have unusual shapes or are more geometrically complex tend to have lesser effects.

- ***Orientation and Profile.*** The orientation or profile of a building can also affect wind speeds. When the wide face of a building, as opposed to its narrow face, is oriented toward the prevailing wind direction, the building has more surface area to intercept and redirect winds down to ground level, thus increasing the probability of strong and turbulent winds at ground level.

Existing Climate and Wind Conditions in Project Site Vicinity

Meteorological data from the City and County of San Francisco (CCSF) show that winds from the northwest, west-northwest, west, and west-southwest are the most prevalent in eastern San Francisco and reflect the persistence of sea breezes.[2] Average wind speeds in the city are highest in the summer

[1] Building articulation refers to street frontage elements, both horizontal and vertical, that help create a streetscape of interest.

[2] City and County of San Francisco, wind monitoring data for Pier 40, 2016. Available online at https://data.sfgov.org/Energy-and-Environment/Historic-San-Francisco-Wind-Monitoring-Data/rabs-nyxp data. Accessed on April 20, 2017.

and lowest in the winter; the strongest peak winds occur in winter in association with storm events. Throughout the year, the highest wind speeds typically occur in mid-afternoon and the lowest in the early morning. Westerly to northwesterly winds are the most frequent and strongest winds in the city regardless of season, although topography and structures affect localized wind patterns.

The project site, the Southeast Water Pollution Control Plant (Southeast Plant or SEP), 1550 Evans Avenue, and the Piers 94 and 96 staging areas are generally flat; the approximately 15-foot-tall berm and retaining wall supporting the Caltrain tracks extend along the western boundary of the project site and the Southeast Greenhouses site. The Southeast Greenhouses site, which could be used for construction staging, gently slopes to the northeast. Based on wind rose[3] data (shown on Figure 4.8-1 in Section 4.8, Air Quality) obtained for the grid cell[4] for the SEP's meteorological station (years 2007 to 2011), winds in the vicinity are predominantly from the west to southwest, and average wind speeds are light (5 to 6 miles per hour).[5]

Existing Building Characteristics in Project Vicinity

Salient characteristics of existing structures at the project site and the SEP are as follows (refer also to the aerial photograph presented on Figure 2-2 in Chapter 2, *Project Description*):

- ***Project Site.*** The Central Shops site is surrounded by a chain-link fence and includes three rectangular buildings ranging from one to two stories, as well as several one-story aluminum buildings; these buildings range in size from approximately 13,000 to 50,000 square feet. The tallest building at the site (Building B) is approximately 30 feet tall. The Asphalt Plant site is surrounded by a chain-link fence and includes a three-story steel asphalt mixing structure approximately 65 feet across and about 40 feet in height. There are also several rectangular one-story industrial buildings ranging in size from approximately 800 to 3,800 square feet, which will be demolished prior to BDFP construction. The project site also contains two areas within the existing SEP.

- ***SEP.*** Both SEP North and SEP South are densely developed with buildings ranging in size from approximately 100 to 38,000 square feet. The tallest above-grade structures at the SEP include an unused chimney along Quint Street (200 in height) and the following facilities which range in height from 52 to 65 feet: existing Headworks buildings, oxygen generation air separators, Dryer Building, waste gas burners, and bin hoppers. One of the Headworks buildings, a structure extending approximately 400 feet along Evans Avenue with two square concrete towers on the eastern and western ends, is the largest SEP structure adjacent to a public street.[6]

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3 A wind rose is a graphical representation of wind speed and direction over a discrete period of time. See Section 4.8, Air Quality.

4 "Grid cell" here refers to the latitude and longitude position of the sites that are measured for wind speed. The SEP's meteorological station is atop the Master Control and Laboratory Building near the corner of Phelps Street and Jerrold Avenue (UTM Easting 553.647km and UTM Northing 4177.212km).

5 CH2M Hill and Brown and Caldwell, Final Southeast Plant Odor Characterization Report, December 2015, *in* SFPUC, Final Biosolids Digester Facilities Project Conceptual Engineering Report, March 2016.

6 Brewster, Brad, ESA, Department of Parks and Recreation (DPR) form, Southeast Treatment Plant. Prepared for San Francisco Public Utilities Commission, June 2015.

4.10.1.2 Shadow

Background

In an urban environment, shadow is a function of the height, size, and massing of buildings and other elements of the built environment, as well as the angle of the sun. The angle of the sun varies due to the time of day (from rotation of the earth) and the change in seasons (due to the earth's elliptical orbit around the sun and the earth's tilted axis). The longer mid-day shadows are cast during the winter (when the mid-day sun is lowest in the sky), and the shorter mid-day shadows are cast during the summer (when the mid-day sun is higher in the sky). At the time of the summer solstice (which falls approximately on June 21 of every year), the mid-day sun is highest in the sky, and the longest day and shortest night occur on this date. Conversely, the shortest day and longest night occur on the winter solstice (which falls on approximately December 21 of every year). The vernal and fall equinoxes (when day and night are equal in length) represent the halfway point between solstices.

San Francisco is generally densely populated and urbanized, except for publicly owned open spaces that make up approximately 20 percent of the total land area. As discussed below in Section 4.10.2, in 1984 San Francisco voters passed a proposition to preserve sunlight in publicly owned open spaces through restrictions in the issuance of building permits.

Existing and Planned Open Space Under Public Jurisdiction in the Project Site Vicinity

The project site and off-site staging areas are within the eastern portion of San Francisco. There are two parks approximately 0.2 mile and 0.3 mile from the SEP, respectively: Palou & Phelps Mini-Park and Youngblood Coleman Playground (refer to Figure 4.2-1 in Section 4.2, Land Use). These parks are under the jurisdiction of the San Francisco Recreation and Parks Department (SFRPD). The Wu Yee South East Child Development Center at the Southeast Community Center has an outdoor play area along Phelps Street, just south of the Southeast Greenhouses site, that is not under the jurisdiction of the SFRPD. Public access to SEP facilities is restricted, although Jerrold Avenue, a public roadway, bisects the plant and the project site. Nearby publicly accessible areas include Jerrold Avenue and Rankin Street, which abut the project site, and Phelps Street and Evans Avenue. Rankin Street is not a through street and has limited sidewalks, constraining public access. Jerrold and Evans Avenues and Phelps Street have sidewalks. Quint Street was closed to through traffic in October 2015 as part of a separate Caltrain project.[7]

[7] San Francisco Planning Department, Preliminary Mitigated Negative Declaration, Quint-Jerrold Connector Road Project, Case No. 2013.0858E, August 5, 2015.

4.10.2 Regulatory Framework

4.10.2.1 Federal Regulations

There are no federal regulations governing wind or shadow effects that apply to the BDFP.

4.10.2.2 State Regulations

There are no state regulations governing wind or shadow effects that apply to the BDFP.

4.10.2.3 Local Regulations

Wind

The San Francisco Planning Code establishes wind comfort and wind hazard criteria for evaluating new development in four areas of the city: the C-3 Downtown Commercial Districts (Section 148), the Van Ness Avenue Special Use District (Section 243[c][9]), the Folsom–Main Residential/Commercial Special Use District (Section 249.1), and the Downtown Residential District (Section 825). The San Francisco Planning Code sections provide that any new building or addition located in these areas of the city that would cause wind speeds to exceed the hazard level of 26 mile per hour (mph)-equivalent (as defined in the Planning Code) for more than one hour of any year must be modified to meet this criterion. (The 26-mph standard accounts for short-term—three-minute averaged—wind observations at 36 mph as equivalent to the frequency of an hourly averaged wind speed of 26 mph. Winds over 34 mph make it difficult for a person to maintain balance, and gusts can blow a person over.) The BDFP is not within any of the four areas of the city identified above. For California Environmental Quality Act (CEQA) purposes, the San Francisco Planning Department generally refers to the wind hazard criterion to determine the significance of wind effects related to new development in the city.

Shadow

San Francisco General Plan

The Recreation and Open Space Element of the *San Francisco General Plan*[8] includes the following policy related to potential sunlight access or shading impacts:

> ***Policy 1.9:*** Preserve sunlight in public open spaces.

The policy promotes sunlight access to public open spaces and avoidance of shading from new development to maintain the utility and comfort of public open spaces. It notes that Planning Code Section 295 (described below) protects SFRPD properties and that the City should support more specific protections elsewhere to maintain sunlight in open spaces during the hours of their most

[8] City and County of San Francisco (CCSF), *San Francisco General Plan,* Recreation and Open Space Element, April 2014.

intensive use, while balancing this with the need for new development to accommodate a growing population in the city.

The project is not located on SFRPD property, and none of the project components would be located in areas accessible to the public.

San Francisco Planning Code

San Francisco Planning Code Section 295,[9] adopted in 1984 pursuant to voter approval of Proposition K (also known as the Sunlight Ordinance), prohibits the issuance of building permits for structures over 40 feet in height that would cast shade or shadow from one hour after sunrise to one hour before sunset at any time of year on property under the jurisdiction of, or designated to be acquired by, the Recreation and Park Commission, unless the Planning Commission determines that the shade or shadow would have an insignificant adverse impact on the use of such property. Specifically, the Recreation and Park Commission and the Planning Commission consider whether the new shadow would be adverse to use of a park, based on the qualitative criteria adopted in 1989.[10] These criteria consider the timing of the shadow (both time of day as well as time of year), as well as the size, duration, and location of the shadow and the use patterns of those areas of the park that may be affected. The criteria also include consideration of whether the proposed development serves the public interest in terms of a needed use or contribution to urban form.

As described in Chapter 2, *Project Description*, some of the proposed BDFP facilities would be more than 40 feet in height; therefore, the project is subject to review under Planning Code Section 295.

4.10.3 Impacts and Mitigation Measures

4.10.3.1 Significance Criteria

The project would have a significant impact related to wind and shadow if it were to:

- Alter wind in a manner that substantially affects public areas; or
- Create shadow in a manner that substantially affects outdoor recreation facilities or other public areas.

Due to the nature of the BDFP, there would be no impact related to the following topics for the reasons described below:

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[9] Planning Code Section 295 provides as follows: "The City Planning Commission shall conduct a hearing and shall disapprove the issuance of any building permit governed by the provisions of this Section if it finds that the proposed project will have any adverse impact on the use of the property under the jurisdiction of, or designated for acquisition by, the Recreation and Park Commission because of the shading or shadowing that it will cause, unless it is determined that the impact would be insignificant. The City Planning Commission shall not make the determination required by the provisions of this Subsection until the general manager of the Recreation and Park Department in consultation with the Recreation and Park Commission has had an opportunity to review and comment to the City Planning Commission upon the proposed project."

[10] San Francisco Planning Department, Informational Hearing on Section 295 Actions Related to the Transit Center District Plan and Transbay Tower (101 1st Street), Executive Summary, September 27, 2012.

- ***Wind and Shadow from Project Construction*.** Construction equipment would be smaller than or similar in size and height to other equipment and buildings in the area. The construction equipment would be moved to different locations within the project site as needed during the construction period and would not be permanent. Consequently, construction activities would not substantially alter wind patterns in the project vicinity and would not be tall enough to create substantial new shadows that could affect public open spaces. Therefore, the two significance criteria are not applicable to construction of the project, and construction-related effects are not discussed further.

4.10.3.2 Approach to Analysis

Operational Impacts

This analysis considers whether the project structures could alter wind patterns in the project vicinity and/or be tall enough to create substantial new shadows that could affect public open spaces (i.e., outdoor recreation facilities or other public areas). The analysis is based on evaluation of (1) the size, form, and placement of proposed structures as compared to existing structures; and (2) proximity to public areas. Regarding the analysis of wind patterns, while San Francisco Planning Code Section 148 does not apply to the project area, the wind standards in Section 148 nonetheless provide an appropriate methodology and criteria for the analysis of wind effects in the project area. Consequently, for the purposes of CEQA review, an exceedance of the Planning Code's wind hazard criterion (qualitatively estimated based upon building height) is used in this EIR as the standard for determining whether the project would alter pedestrian winds in a manner that would substantially affect public areas.

Regarding the analysis of shadow, the analysis uses a "shadow fan" diagram prepared by the San Francisco Planning Department and included in **Appendix WS** of this EIR to determine whether any properties under the jurisdiction of the Recreation and Park Commission could be potentially affected by project shadow.[11]

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes reasonably foreseeable future projects in the vicinity of the project that could contribute to a cumulative impact; refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects in the vicinity of the BDFP. The cumulative analysis for wind and shadow uses a list-based approach to analyze the effects of the project in combination with other past, present, and probable future projects in the immediate vicinity. The cumulative impact analysis assumes that construction and operation of other projects in the geographical area, listed in Table 4.1-1, would be required to comply with the same regulatory requirements as the project (unless specific information to

[11] The shadow fan is a diagram that shows the maximum extent of the shadows cast by a building throughout the year, between one hour after sunrise and one hour before sunset. The preliminary shadow fan is typically based on full buildout of the zoning envelope (the maximum three-dimensional space within which a structure can be built, based on the zoning of the relevant lot), including complete lot coverage and maximum building height (in this case, 65 feet).

the contrary is known about a project[12]), which would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). Long-term or permanent cumulative wind and shadow impacts would occur if the project and cumulative projects in the vicinity of the project site and the SEP were to involve permanent aboveground facilities that would also contribute to alteration of wind patterns and speed or shadows in public areas. If the project's contribution to a cumulative impact is determined to be cumulatively considerable (i.e., significant), then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.10.3.3 Impact Evaluation

Operational Impacts

Impact WS-1: The project structures would not alter wind in a manner that would substantially affect public areas. (Less than Significant)

Project implementation would involve construction and operation of new solids treatment, odor control, energy recovery, and associated facilities at the project site, expanding the boundaries of SEP operations in a westerly direction. Existing structures at the project site would be demolished and replaced by the proposed facilities. The two two-story buildings at 1550 Evans Avenue would also be demolished as part of the BDFP. As discussed in Section 4.10.1, Setting, existing structures on the project site range in height from 10 feet to 40 feet; existing structures at the adjacent SEP reach up to 65 feet, with one unused chimney that is 200 feet high. Once constructed, the proposed facilities would range in height from 10 feet to 65 feet above grade, although some building appurtenances would extend above 65 feet in height, including the exhaust stack atop the Energy Recovery Facility which would be 75 feet high.

New structures that would be adjacent to publicly accessible areas (sidewalks) include those along Jerrold Avenue: Maintenance Shops 1 and 2; digester gas treatment; and energy recovery (refer to Figure 2-5 in Chapter 2, *Project Description*). The existing 3,800-square-foot Service Building (Building 870 on Figure 2-3 in Chapter 2, *Project Description*) extends 20 feet above grade and would be replaced with the Maintenance Shops 1 building, which would be approximately 12,600 square feet and 30 feet high. Maintenance Shops 1 would be the largest new structure adjacent to Jerrold Avenue. The smaller Maintenance Shops 2 building (5,500 square feet and 15 feet high) would also be constructed along Jerrold Avenue, at a site currently occupied by temporary storage areas and parking. With the expanded boundaries of the SEP, fencing would be extended along Jerrold Avenue and along Quint Street to the western terminus of the project site boundary.

[12] An exception to this general assumption about regulatory compliance for the current analysis is the San Francisco Gateway project, which proposes to construct facilities to a height of 115 feet in the 65-J Height and Bulk District, which has a height limit of 65 feet.

As indicated in Section 4.10.1.1, a project's wind impacts are directly related to its height, orientation, design, location (particularly relative to public areas), and surrounding development context. Based on wind analyses for other development projects in San Francisco, a building or structure that does not exceed a height of 80 feet generally has little potential to cause substantial changes to ground-level wind conditions. The tallest project facilities, at 65 feet above grade, would include the Solids Pretreatment Facility, digesters, and Biosolids Dewatering Facility (refer to Figure 2-5 and Table 2-4 in Chapter 2, *Project Description*). Other tall project structures would include the digester gas storage tank (60 feet tall) and the Energy Recovery Facility (57 feet tall, with an exhaust stack 75 feet tall). These structures would exceed the height of existing structures within the project site but would be similar in height to some existing buildings at the SEP and to neighboring buildings that would remain. With buildings at a maximum height of 65 feet, the BDFP would not be substantially taller than adjacent or nearby buildings and structures. As indicated in Section 4.10.1.1, Setting, winds at the SEP are typically from the west-southwest and average wind speeds (5 to 6 miles per hour) are light. The cylindrical massing of the digesters and digester gas storage tank would allow overhead winds to flow eastward instead of being intercepted and redirected to ground level. The Biosolids Dewatering Facility would be northeast of the digesters. The digesters would slow the wind currents before they reach the Biosolids Dewatering Facility, reducing their potential to cause substantial changes to ground-level wind conditions. The Solids Pretreatment Facility would be near the center of the project site, would be largely sheltered from wind currents, and would have little to no potential to cause substantial changes to ground-level conditions. The wide face of the new Energy Recovery Facility would encounter prevailing winds from the west but, because of this building's massing, orientation, and location, it would not substantially alter ground-level conditions in public areas; there are no public sidewalks or other public areas located west of this building. The density of development adjacent to publicly accessible areas would generally be similar to the density of existing development in these areas. Consequently, there would be no corridors formed by new structures along Jerrold Avenue that would funnel wind toward public areas. While no permanent structures are proposed for the staging areas, two buildings at 1550 Evans Avenue would be demolished. Although one of these buildings is near the public sidewalk along Evans Avenue, the buildings are only two stories tall, lower than the height at which structures could substantially affect wind patterns experienced at ground level. As such, the project would not contribute to wind pattern alteration in a manner that would substantially affect public areas.

For the above reasons, the project would not alter wind patterns in a manner that substantially affects public areas, and this impact would be ***less than significant.***

Mitigation: None required.

Impact WS-2: Project structures would not create new shadow in a manner that would substantially affect outdoor recreation facilities or other public areas. (Less than Significant)

Implementation of the project would involve construction of new structures near publicly accessible areas. As stated in Section 4.10.1, the Palou & Phelps Mini-Park and Youngblood Coleman Playground are approximately 0.2 mile and 0.3 mile from the SEP, respectively, and the Wu Yee

South East Child Development Center has an outdoor play area south of the Southeast Greenhouses. The shadow fan analysis (refer to Appendix WS) was used to determine the locations where shadows generated by project structures would be cast. The shadow fan analysis conservatively models shadow cast by the maximum buildout of the project site as well as the remainder of SEP North. According to the shadow fan analysis, due to the distance between the proposed structures and the nearest recreational facilities, there would be no new shadows created by the project that would affect outdoor recreational areas.[13]

Proposed facilities would be restricted from public access, though new structures would be adjacent to publicly accessible areas (sidewalks) including those along Jerrold Avenue and Rankin Street. Full buildout of the project site and SEP North at 65 feet above grade would cast shade on surrounding public streets including Jerrold and Evans Avenues and Rankin and Phelps Streets. In general, the net new project shadow would fall to the west of the project site in the morning, to the north during the middle of the day, and to the east in the late afternoon and early evening. Shadows on streets and sidewalks would be transitory, would not substantially affect the function of sidewalks, would not exceed levels commonly expected in urban areas, and would be considered a less-than-significant impact under CEQA. Due to the placement of these structures, increased shading would not substantially affect actively used public areas.

For the reasons described above, the project would not create new shadow that would substantially affect public open spaces. As a result, the impact would be ***less than significant***.

Mitigation: None required.

Cumulative Impacts

Impact C-WS-1: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative impacts on wind. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to changes in wind generally includes the areas around the project site and SEP. (No permanent structures are proposed at the staging areas.) Given that wind effects are highly localized, the geographic context for cumulative wind effects encompasses the immediate project site vicinity—generally a few blocks (less than one-quarter mile) in each direction. It is in this vicinity that cumulative development, when combined with the project, would have any effect on wind and shadow on the same locations. Such projects include most projects at the SEP, the Central Bayside System Improvement Project, Central Shops Relocation and Land Reuse, Land Reuse at 1801 Jerrold Avenue, Southeast Greenhouses Demolition, Jerrold Bridge North Span Replacement, Quint Street Bridge Replacement Project, Quint-Jerrold Connector Road, Peninsula Corridor Electrification Project, and San Francisco Gateway. The Southeast Community Facility Revitalization Project may include relocation of the Southeast

[13] San Francisco Planning Department, Shadow Fan, September 3, 2015.

Community Facility to the 1550 Evans Avenue site. Refer to Figure 4.1-1 in Section 4.1, Overview, for the locations of these projects.

A cumulative impact could result if, together, buildings or structures constructed in the cumulative scenario would increase the relief between building heights in the area, create a substantial slab-shaped massing, or enlarge the adjacent surface area oriented toward the prevailing wind direction (thus increasing the winds directed toward the same ground-level public areas). As described above, the maximum height of BDFP buildings would be 65 feet, which is similar to the heights of existing buildings on the site, a height that is generally considered too low to result in substantial ground-level wind effects. Other projects in the cumulative scenario located along Jerrold Avenue include Central Shops Relocation and Land Reuse, Land Reuse at 1801 Jerrold Avenue, Peninsula Corridor Electrification, and Jerrold Bridge North Span Replacement. The first three of these cumulative projects would not construct buildings and thus not contribute to construction of a substantial slab-shaped massing nor enlarge building surface area along Jerrold Avenue. The Jerrold Bridge North Span Replacement is complete, shorter than the proposed BDFP facilities, and oriented nearly perpendicular to the massing created by BDFP facilities along Jerrold Avenue, and thus would not combine with the BDFP to create substantial slab-shaped massing or enlarge the adjacent surface area along Jerrold Avenue. The Southeast Plant Headworks Replacement Project is the single cumulative project located along Rankin Street, and would replace the existing headworks facilities with new structures up to 65 feet tall. While the resulting combined massing along the block of Rankin Street west of Evans Avenue could result in slab-shaped massing along Rankin Street facing the prevailing wind direction, the buildings would not be tall enough to result in substantial ground-level wind effects. The San Francisco Gateway project, southwest of the BDFP, may itself cause wind-related effects based on both its height (115 feet, 50 feet taller than the 65-foot height limit in the area) and the slab shape of its four buildings, although the widest side of the buildings would not be oriented directly toward the prevailing wind,[14] which would moderate its wind effects to some degree. That project's wind-related effects will be addressed in the EIR prepared for it. Given that the BDFP would have little to no potential to cause substantial changes to ground level wind conditions, as discussed in Impact WS-1, and because (1) the BDFP is separated from the San Francisco Gateway site by the Caltrain tracks and other structures and (2) many BDFP structures have a different orientation relative to wind direction, the BDFP would not combine with the San Francisco Gateway project to increase the relief between building heights in the area, create a substantial slab-shaped massing, or enlarge the adjacent surface area oriented toward the prevailing wind direction. Therefore, these projects would not combine to create a significant cumulative effect.

The single cumulative project near or adjacent to the 1550 Evans Avenue site is the Southeast Community Facility Revitalization, which could construct new facilities at 1550 Evans Avenue. The existing buildings at 1550 Evans Avenue would be demolished prior to Southeast Community Facility Revitalization construction. Any ground-level wind effects would depend on the design of the Southeast Community Facility Revitalization, the relevant details of which are currently unavailable, and would be evaluated in project-specific environmental review for that project. For

[14] This assessment assumes that direction of prevailing winds for this project site would be the same at the SEP, which is shown in Figure 4.8-1 in Section 4.8, Air Quality.

these reasons, the BDFP and cumulative projects in the geographic scope would not result in an increase in hazardous wind conditions. The cumulative impact would be ***less than significant***.

Mitigation: None required.

Impact C-WS-2: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative impacts on shadow. (Less than Significant)

The geographic scope of impacts related to changes in shadow includes projects that would cast shadows affecting different portions of the same public areas affected by shadows identified in the BDFP shadow fan analysis. As discussed above, the preliminary shadow fan is typically based on full buildout of the zoning envelope, including complete lot coverage and maximum building height. As described under Impact WS-2 above, due to the distance between the proposed structures and the nearest recreational facilities, there would be no new shadows created by the project that would affect outdoor recreational areas. The shadow fan extends from the project site and SEP North outward across Jerrold and Evans Avenues and Rankin and Phelps Streets, and onto other adjacent streets. Cumulative projects that could cast shadows along different portions of these same streets would include the Southeast Plant Headworks Replacement Project, San Francisco Whole Produce Market Expansion, San Francisco Gateway, the Southeast Community Facility Revitalization, and the Central Bayside System Improvement Project. While streets are public areas, the shadows cast would be transitory, would not substantially affect the function of sidewalks, and would not exceed levels commonly expected in urban areas. For these reasons, the cumulative impact would be ***less than significant***.

Mitigation: None required.

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4.11 Recreation

This section describes publicly accessible recreational resources, including parks and designated recreational trails, in the vicinity of the Biosolids Digester Facilities Project (BDFP or project). For the purpose of this assessment, recreational resources are generally defined as the natural and built features that people use for recreation (e.g., fields, trails, and playgrounds), including facilities associated with the recreational resources that enable recreation, such as parking facilities and restrooms. This impact analysis evaluates the potential for the project to result in impacts on recreational resources and identifies mitigation measures to avoid or reduce significant adverse impacts, as appropriate.

4.11.1 Setting

The San Francisco Recreation and Parks Department (SFRPD) manages more than 230 parks, playgrounds, and open spaces throughout San Francisco that are available to the public for recreation.[1] The SFRPD manages the majority of the open space and recreational resources near the project site and off-site staging areas. There are no designated recreational facilities within or immediately adjacent to the Southeast Water Pollution Control Plant (Southeast Plant or SEP).

4.11.1.1 Parks

Palou & Phelps Mini-Park (refer to Figure 4.2-1 in Section 4.2, Land Use) is south of Palou Avenue at Phelps Street, approximately 0.2 mile south of the SEP. This mini-park is operated by the SFRPD and includes community green space with benches, slides, and a jungle gym.[2] There are also numerous trails that extend up the hillside adjoining the south end of the park.

Youngblood Coleman Playground (also shown on Figure 4.2-1) is at 1398 Hudson Street, approximately 0.3 mile east of the SEP. This is an approximately six-acre sports park that serves the Bayview-Hunters Point neighborhood and includes artificial turf soccer and softball fields, basketball and tennis courts, and picnic areas.[3] The SFRPD manages the park.

Heron's Head Park (refer to Figure 4.2-2 in Section 4.2) is a 22-acre open space and wildlife habitat at the eastern terminus of Cargo Way at Jennings Street, just south of Pier 96. Heron's Head Park contains one of the few wetlands on San Francisco's shoreline. Heron's Head Park attracts more than 100 bird species a year and is used for education and recreation by bird-watchers, hikers, students, teachers, and visitors from around the San Francisco Bay Area. The Port of San Francisco manages Heron's Head Park.[4]

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1 San Francisco Recreation and Parks Department, Parks & Open Spaces, 2015 Available online at http://sfrecpark.org/parks-open-spaces/. Accessed on October 12, 2015.

2 San Francisco Parks Alliance, Palou & Phelps Mini-Park, 2015. Available online at http://www.sfparksalliance.org/our-parks/parks/palou-phelps-mini-park. Accessed on August 7, 2015.

3 San Francisco Recreation and Parks Department, Youngblood Coleman Playground, 2010-2015. Available online at http://sfrecpark.org/destination/youngblood-coleman-playground/. Accessed on August 7, 2015.

4 City and County of San Francisco, Port of San Francisco, Heron's Head Park, 2015. Available online at http://www.sf-port.org/index.aspx?page=210. Accessed on August 7, 2015.

There are approximately five acres of salt marsh and uplands that are being restored along the shore north of Pier 94, providing opportunities for wildlife viewing. The Port of San Francisco and Golden Gate Audubon Society manage this site. While public amenities are few, the goal for this site, in addition to preserving habitat, is to encourage public access and education.[5,6]

4.11.1.2 San Francisco Bay Trail

The San Francisco Bay Trail (Bay Trail) (refer to Figure 4.2-2) is a multi-purpose recreational trail that circumnavigates the entire San Francisco Bay and provides opportunities for walking, jogging, and bicycling.[7] One segment of the Bay Trail crosses Heron's Head Park near the park entrance and extends along the Bay shoreline south of the park; a spur of the Bay Trail extends through the park via a dirt/gravel path. North of the park a paved portion of the Bay Trail extends along Cargo Way to the junction of Amador and Illinois Streets where it turns and continues north along Illinois Street.[8] In this area, the Bay Trail coincides with San Francisco's Blue Greenway (except for the Bay Trail spur that extends into Heron's Head Park), which is the City's project to improve the southerly portion of the Bay Trail in San Francisco as well as the newly established Bay Area Water Trail and associated waterfront open space system.[9]

4.11.2 Regulatory Framework

4.11.2.1 Federal Regulations

There are no federal regulations that govern recreational resources that are applicable to the BDFP.

4.11.2.2 State Regulations

In 1987, Senate Bill 100 was passed into law,[10] directing the Association of Bay Area Governments to create a trail/recreational corridor that was to be aligned along the Bay. The Bay Trail is a multi-purpose recreational trail that, when complete, will encircle San Francisco Bay and San Pablo Bay with a continuous 500-mile network of bicycling and hiking trails. A portion of the Bay Trail is near the Piers 94 and 96 staging areas. The law does not contain any specific policies that relate to project impacts on recreational resources.

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5 Port of San Francisco, Pier 94 Wetlands, 2016. Available online at http://sfport.com/pier-94-wetlands. Accessed on August 15, 2016.

6 Golden Gate Audubon Society, Pier 94, 2016. Available online at http://goldengateaudubon.org/conservation/wetlands/pier-94/. Accessed on August 15, 2016.

7 Information in this section is derived from San Francisco Bay Trail Project, Welcome to the San Francisco Bay Trail, 2016. Available online at http://baytrail.org/about-the-trail/welcome-to-the-san-francisco-bay-trail/. Accessed on December 30, 2016.

8 San Francisco Bay Trail Project, San Francisco Bay Trail Maps and Guides, 2015. Available online at http://baytrail.org/baytrailmap.html. Accessed August 12, 2015.

9 Port of San Francisco, Blue Greenway, 2016. Available online at http://sfport.com/blue-greenway-project. Accessed on August 22, 2016.

10 Senate Bill 100 is codified in Division 5 of the Public Resources, Chapter 11 (commencing with Section 5850).

4.11.2.3 Local Regulations

San Francisco General Plan

The *San Francisco General Plan* provides general policies and objectives to guide land use decisions. The Recreation and Open Space Element of the General Plan serves to guide the City's land use decisions as they relate to recreational resources and the open space system.[11] See Chapter 3, *Plans and Policies*, for additional discussion of the *San Francisco General Plan*.

Bayview Hunters Point Area Plan

The Recreation and Open Space Element of the *Bayview Hunters Point Area Plan* includes policies to address the neighborhood's recreation and open space system, including policies that call for renovating and expanding area facilities and emphasizing shoreline connections in new development projects. Refer to Chapter 3, *Plans and Policies*, of this EIR for additional discussion of the *Bayview Hunters Point Area Plan*.

4.11.3 Impacts and Mitigation Measures

4.11.3.1 Significance Criteria

The project would have a significant impact related to recreational resources if it were to:

- 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;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or
- Physically degrade existing recreational resources.

4.11.3.2 Approach to Analysis

This analysis assesses recreation and public open space impacts associated with the implementation of the project. Local planning documents and maps were reviewed and site visits conducted to identify the recreational resources in the project area that, because of their proximity, could be directly or indirectly affected by the project.

Construction and Operational Impacts

To determine the potential for construction activities and project operations to cause physical effects on recreation facilities or resources, the project-related activities at the project site and off-site staging areas were evaluated for their potential to affect identified recreational resources in the vicinity. Short-term physical degradation or temporary loss of use of a recreational facility (e.g., a bicycle path or a park area) would not typically result in a finding of a significant recreational impact if the use is restored

[11] City and County of San Francisco, *San Francisco General Plan*, Recreation and Open Space Element, 2014. Available online at http://www.sf-planning.org/ftp/General_Plan/Recreation_OpenSpace_Element_ADOPTED.pdf.

after completion of construction. A significant recreational impact would more typically result from the permanent loss of a recreational opportunity or the physical degradation of a recreational resource, particularly if there are no similar alternative recreational facilities or resources available nearby. Section 4.6, Transportation and Circulation, addresses potential construction traffic impacts on pedestrians and bicyclists.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes past, present, and reasonably foreseeable future projects in the vicinity of the project that could contribute to a cumulative impact; please refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects in the vicinity of the BDFP. The cumulative analysis for Recreation uses a list-based approach to analyze the effects of the project in combination with other past, present, and probable future projects in the immediate vicinity. Cumulative construction and operations impacts are analyzed together because the consequences of the impacts (e.g., loss of use or deterioration of a recreational resource) would be similar, although the duration of the potential impacts would differ. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

The geographic scope for the analysis of potential cumulative impacts on recreational resources encompasses the recreational facilities and trails in the vicinity of project site and off-site staging areas. This generally includes the areas around the SEP within the Bayview-Hunters Point community, and the areas around Piers 94 and 96.

4.11.3.3 Impact Evaluation

Construction and Operational Impacts

Impact RE-1: The project's construction and operation would not (a) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated, (b) include recreational facilities or require the construction or expansion of recreational facilities, or (c) otherwise result in substantial degradation of existing recreational resources. (No Impact)

Temporary, direct impacts on established recreational facilities (parks and trails) and resources could result if construction activities overlapped geographically with existing recreational facilities or trails. Project construction activities would not directly affect any recreational facilities because there are no such facilities within the project site or the off-site staging areas. Furthermore, construction activities would not affect nearby park and trail facilities because the existing parks in the vicinity would remain open and are far enough from the project site (over 1,000 feet to the closest park) and off-site staging areas (over 300 feet to the Bay Trail) that project construction would not result in the physical deterioration or degradation of these recreational resources.

The project does not include new recreational facilities and would not permanently affect existing recreational resources. The project does not include new residential or other uses that would generate increased demand for parks or other recreational facilities. The project would not increase existing operations staff levels at the SEP, so demand at existing recreational facilities near the SEP would not increase as a result of project operations; ongoing demand would continue to be met by existing parks and recreational facilities. As such, operation of the project would have ***no impact*** related to direct or indirect physical deterioration of recreational resources.

Mitigation: None required.

Cumulative Impacts

Impact C-RE-1: The project, in combination with past, present, and probable future projects, would not substantially affect recreational resources. (No Impact)

Pursuant to CEQA Guidelines Section 15130(a)(1), an EIR should not discuss impacts that do not result in part from the project evaluated in the EIR. As described under Impact RE-1, the project would have no impact related to increased use or degradation of parks or other recreational facilities. Therefore, there would be ***no significant cumulative impact*** on these resources to which the project would contribute.

Mitigation: None required.

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4.12 Utilities and Service Systems

This section describes existing utilities and service systems in the vicinity of the Southeast Water Pollution Control Plant (Southeast Plant or SEP) and evaluates the potential impacts of the Biosolids Digester Facilities Project (BDFP or project) on water supply and treatment, stormwater drainage facilities, wastewater treatment, and solid waste disposal. Mitigation measures are identified to avoid or reduce significant adverse impacts, as appropriate.

4.12.1 Setting

The subsections below describe existing water supply and demands at the SEP, San Francisco's wastewater and stormwater systems, solid waste disposal facilities within the greater San Francisco Bay Area and beyond that could receive construction- and operation-related wastes from the BDFP; and the current disposition of biosolids produced at the SEP.

4.12.1.1 Water Supply

The San Francisco Public Utilities Commission (SFPUC) provides potable water supply within San Francisco through its regional water system. This system collects water primarily from the Tuolumne River watershed, with additional supply from reservoirs in the East Bay and San Francisco peninsula.[1] In 2016, the SFPUC adopted the *2015 Urban Water Management Plan for the City and County of San Francisco* (2015 UWMP) in compliance with the California Urban Water Management Planning Act[2] (described in greater detail below in Section 4.12.2.2). The 2015 UWMP describes San Francisco's long-term strategy for ensuring that there is adequate water available from their regional and local water supplies to meet existing and future water demands over the 20-year planning horizon between 2020 and 2040.

The regional water system provides potable water to wholesale customers located outside of San Francisco as well as to retail customers that are located both within San Francisco and outside of San Francisco. Water for the proposed project would be obtained from the retail supply. **Table 4.12-1** summarizes the projected retail water supply and retail water demands from 2020 through 2040. As shown in this table, both retail water supplies and demand are projected to increase from 77.5 million gallons per day (mgd) in 2020 to 89.9 mgd in 2040, with no projected surplus or shortage. This retail water will be supplied primarily from the regional water system, supplemented by local groundwater supplies. In addition, planned recycled water projects in San Francisco will provide water for nonpotable uses and make more potable water available for the retail water supply. The increase in retail water supply through 2040 comes primarily from increased deliveries from the regional water system and construction of the Eastside Recycled Water Project by 2030.

1 SFPUC, *2015 Urban Water Management Plan for the City and County of San Francisco*, June 2016.
2 California Water Code Sections 10610-10656, as amended.

TABLE 4.12.1
PROJECTED SFPUC RETAIL WATER SUPPLIES AND WATER DEMANDS (MGD)

	2020. All Hydrologic Scenarios	2025, All Hydrologic Scenarios	2030, All Hydrologic Scenarios	2035, All Hydrologic Scenarios	2040 Normal Year, Dry Year, and Multiple Dry Years, Year 1	2040 Multiple Dry Years, Years 2 and 3
Total Retail Demand	77.5	79.0	82.3	85.9	89.9	89.9
Total Retail Supply	77.5	79.0	82.3	85.9	89.9	88.8
Projected Surplus (Shortage)	0	0	0	0	0	-1.1

NOTES: See text for a description of hydrologic scenarios considered.

SOURCE: SFPUC, 2015 Urban Water Management Plan

Current water supply projections indicate that the SFPUC regional water system, supplemented by local groundwater and recycled water supplies, will meet San Francisco's needs to 2040 during wet years, a single dry year, and multiple dry years as summarized in Table 4.12-1, except during years 2 and 3 of a multi-year drought when there would be a 1.1 mgd shortfall in retail water supply due to restrictions on deliveries from the regional water supply. This shortfall is approximately 1.2 percent of the total projected (year 2040 during a multi-year drought) retail water demand.

Within San Francisco, potable water is distributed through five major pipelines, two of which provide water to the eastern portion of the city. A 12-inch-diameter pipeline under Jerrold Avenue supplies potable water to the existing SEP biosolids facilities.[3]

As described in Chapter 2, *Project Description* (Section 2.4.1.7, Water Systems and Pump Stations), the SEP currently uses three water systems for treatment processes and other uses: No. 1 water (potable water), No. 2 water (chlorinated and filtered secondary effluent [non-potable]) and No. 3 water (chlorinated secondary effluent [non-potable]). As shown in Table 2-6, in 2015, the SEP used about 43,200 gallons per day (gpd) of No. 1 water, 172,800 gpd of No. 2 water, and 1,108,800 gpd of No. 3 water.

4.12.1.2 Wastewater and Stormwater

The SFPUC operates a combined sanitary sewer and stormwater system in San Francisco, and freshwater flow to San Francisco Bay from the city has been almost entirely diverted to this combined system. However, for portions of the waterfront, including Piers 94 and 96, the Port of San Francisco (Port) manages separated stormwater systems that discharge stormwater directly to the Bay and Islais Creek, while the SFPUC manages the sanitary sewage in these areas.

[3] SFPUC, *Application for Environmental Evaluation for the Biosolids Digester Facilities Project*, January 29, 2015.

Stormwater from the SEP, Asphalt Plant, Central Shops, and staging areas at the Southeast Greenhouses site and 1550 Evans Avenue drains to the combined sewer system, while stormwater at the Piers 94 and 96 staging areas drains to separate storm drain systems operated by the Port and stormwater at the Pier 94 Backlands infiltrates to the ground or runs off to the Bay. Both the combined sewer system operated by the SFPUC and the separate storm drain systems operated by the Port are discussed below. All sanitary (wastewater) flows from the project site as well as the staging areas discharge to the City's combined sewer system.

SFPUC Combined Sewer System

Overview

The SFPUC operates a combined sanitary sewer and stormwater system in San Francisco that is roughly divided into two major drainages: the Bayside and Westside basins. The project site is within the Bayside drainage basin, which covers the east side of San Francisco. The Bayside drainage basin includes a system of 653 miles of pipe to convey stormwater and wastewater to the SEP for treatment year-round. As discussed in Chapter 2, the average dry weather flow to the SEP for years 2012 to 2014 ranged from 58 to 61 mgd. The average dry weather design flow capacity of the SEP is 85 mgd; therefore, the existing dry weather flows are about 72 percent of the treatment capacity, and all dry weather wastewater flow is treated to a secondary level at the SEP.

During the wet season, the North Point Wet Weather Facility (NPF) also treats a portion of the wet weather flows. The combined sewer system includes storage and transport boxes that, during wet weather, retain the combined stormwater and sewage flows that exceed the capacities of the SEP and the NPF for later treatment. When rainfall intensity results in combined flows that exceed the total capacity of the SEP, the NPF, and the 125-million-gallon capacity of the storage and transport structures, the excess flows are discharged through 29 combined sewer discharge (CSD) structures located along the city's bayside waterfront from the Marina Green to Candlestick Point. All discharges from the combined sewer system to the Bay, through either the outfalls or the CSD structures, are operated in compliance with the National Pollutant Discharge Elimination System (NPDES) permit for discharges from the SEP, the NPF, and all of the Bayside wet weather facilities, including CSDs to the Bay (referred to as the Bayside NPDES Permit). Both the combined sewer system and the Bayside NPDES Permit are described in more detail in Section 4.16, Hydrology and Water Quality.

Wastewater and Stormwater Collection at SEP, Asphalt Plant, and Central Shops

A network of 8,000 linear feet of gravity combined sewer mains conveys wastewater and stormwater from within the SEP to the SEP Headworks.[4] Stormwater from all buildings, parking lots, and roadways in the SEP, Asphalt Plant, and Central Shops drains to a 36-inch-diameter combined sewer within the SEP and to other combined sewers in Jerrold Avenue, Phelps Street, and Evans Avenue. Wastewater and stormwater flows from the Asphalt Plant and Central Shops are conveyed to the SEP for treatment before eventual discharge to San Francisco Bay.[5]

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[4] SFPUC, *Southeast Water Pollution Control Plant Condition Assessment*, November 2013.
[5] SFPUC, *Wastewater Enterprise Bayside System Operations Plan Summary Baseline Report*, October 2013.

Port Stormwater Management

The Port manages approximately 7.5 miles of San Francisco's waterfront from Hyde Street Pier on the north to India Basin on the south.[6] The vast majority of this area is served by separate storm drain systems operated by the Port, and stormwater either drains directly to the Bay without treatment, is treated with landscape swales and directed to the Bay, or infiltrates to the ground in areas without a separate drain system. The State Water Resources Control Board (SWRCB) classifies these areas where stormwater drains to the Bay as a municipal separate storm sewer system (or MS4). Accordingly, stormwater discharges from areas managed by the Port are regulated under the SWRCB Water Quality Order No. 2013-0001-DWQ, NPDES General Permit for Waste Discharge Requirements (WDRs) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (the Small MS4 General Stormwater Permit discussed in Section 4.16, Hydrology and Water Quality, under State Regulations).

The Pier 96 staging area drains directly to the Bay via separate storm drain systems. The easterly, paved portion of the Pier 94 staging area drains via a different separate storm drain system to Islais Creek. The Pier 94 Backlands is comprised of unpaved surfaces, and stormwater is treated through a system of landscape swales that collect, treat and convey stormwater. The stormwater, once treated, is released to the Bay through an outfall.

4.12.1.3 Solid Waste Disposal

Residential, Commercial, and Municipal Solid Waste

San Francisco generated approximately 498,430 tons of solid waste during 2014.[7] Recology collects and processes all residential and commercial waste, recycling, and composting for San Francisco through its subsidiaries: San Francisco Recycling and Disposal, Golden Gate Disposal and Recycling, and Sunset Scavenger. All materials are taken to the San Francisco Solid Waste Transfer and Recycling Center where it is sorted for transport to composting and recycling facilities and landfills. Waste that is not composted or recycled is currently taken to the Hay Road Landfill in Solano County. Under its contract with Recology, the City and County of San Francisco (CCSF or City) will dispose of its municipal solid waste at the Recology Hay Road Landfill through at least 2025. The Hay Road Landfill's design capacity is 37 million cubic yards, and the landfill is permitted to accept up to 2,400 tons per day of solid waste. The remaining capacity as of 2010 was over 30 million cubic yards.[8]

With respect to the SEP, a small amount of municipal solid waste is generated and collected by Recology.

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6 Port of San Francisco, *Storm Water Management Plan 2003-2004*, December 2003.

7 California Department of Resources Recycling and Recovery (CalRecycle), Jurisdiction Diversion/Disposal Rate Detail for San Francisco, reporting year 2014. Available online at http://www.calrecycle.ca.gov/LGCentral/Reports/DiversionProgram/JurisdictionDiversionDetail.aspx?JurisdictionID=438&Year=2014. Accessed on July 6, 2016.

8 California Department of Resources Recycling and Recovery (CalRecycle), Facility/Site Summary Details: Recology Hay Road (48-AA-0002). Available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0002/Detail/. Accessed on July 6, 2016.

Construction Wastes

Individual project sponsors and their construction contractors are responsible for managing and disposing of construction wastes. The San Francisco Environment Code Section 708 and Chapter 14 (described in Section 4.12.2.3, below) require recycling and reuse of construction wastes produced in San Francisco.

4.12.1.4 Disposition of Biosolids

As described in Chapter 2 (Section 2.2.2.2, Operating Characteristics), the wastewater treatment process at the SEP currently produces Class B biosolids that are suitable for some land application and beneficial reuse such as use as an alternative daily cover at a landfill or composting. In 2015, the SEP produced approximately 13,000 dry tons of biosolids, which were beneficially reused off-site at the locations listed in **Table 4.12-2**.[9] As summarized in this table, during the dry season, the biosolids were hauled to Sonoma County and Solano County for land application and throughout the year, additional biosolids were transported to Sacramento County for land application. During the wet season, the biosolids were hauled to Sacramento County for land application and also to the Hay Road Landfill (Solano County), Potrero Hills Landfill (Solano County), and Altamont Landfill (Alameda County) for beneficial reuse. Some of the Class B biosolids were also sent to a composting facility near Dos Palos in Merced County for further processing to Class A quality**.** The SFPUC does not have long-term contracts for the off-site disposition of biosolids; therefore, other facilities could be used depending on future contracting arrangements.

TABLE 4.12-2
DISPOSITION OF SOUTHEAST WATER POLLUTION CONTROL PLANT (SEP) BIOSOLIDS IN 2015

Destination	Disposition	Season	Estimated Closure Date
Sonoma and Solano Counties	Land Application	Dry (April to October)	n/a
Sacramento County	Land Application	All seasons	n/a
Hay Road Landfill	Alternative Daily Cover	Wet	2077
Potrero Hills Landfill	Alternative Daily Cover	Wet	2048
Altamont Landfill	Alternative Daily Cover	Wet	2025
Composting Facility in Merced County	Composting	All seasons	n/a

NOTES:
n/a = not applicable
See Chapter 2, *Project Description*, for discussions of land application and alternative daily cover.

SOURCE: SFPUC, City and County of San Francisco Biosolids Annual Summary Report. February 19, 2016; CalRecycle, Facility/Site Summary Details: Recology Hay Road (48-AA-0002), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0002/Detail/, accessed August 26, 2016; CalRecycle, Facility/Site Summary Details: Potrero Hills Landfill (48-AA-0075), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0075/Detail/, accessed September 8, 2016; CalRecycle, Facility/Site Summary Details: Altamont Landfill & Resource Recovery (01-AA-0009), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail/, accessed September 8, 2016.

9 SFPUC, City and County of San Francisco Biosolids Annual Summary Report. February 19, 2016.

4.12.2 Regulatory Framework

This section describes the regulatory framework related to water supply planning as well as disposition of biosolids and solid wastes. Section 4.16, Hydrology and Water Quality, describes federal and state regulations regarding stormwater and wastewater.

4.12.2.1 Federal Regulations

Title 40 Part 503 of the Code of Federal Regulations (40 CFR Part 503) regulates the use or disposal of treated sewage sludge (or biosolids). This rule establishes the requirements for final use or disposal of biosolids when biosolids are applied to land to condition the soil or fertilize vegetation, placed on a surface disposal site for final disposal, or fired in a biosolids incinerator.[10] The rule contains numerical limits for metals in biosolids, pathogen reduction standards, site restrictions, crop harvesting restrictions and monitoring, and record-keeping and reporting requirements for land-applied biosolids as well as similar requirements for biosolids that are surface-disposed or incinerated.[11] As noted in Table 2-1 in Chapter 2, *Project Description,* 40 CFR Part 503 and related guidance documents categorize treated sewage sludge with respect to pathogens as either Class A or Class B, as follows:

- **Class A** biosolids contain no detectable levels of pathogens and do not attract vectors and other potential disease-carrying organisms. According to the United States Environmental Protection Agency (USEPA) Guide to Part 503 Rule, Class A biosolids that meet the USEPA's metals pollutant limits are labeled "Exceptional Quality (EQ)" biosolids and have the fewest restrictions for land applications such as soil conditioning and fertilizer.

- **Class B** biosolids are treated but still contain detectible levels of pathogens. Reuse of Class B biosolids requires buffers and public access and crop harvesting restrictions.

4.12.2.2 State Regulations

California Water Code – Beneficial Reuse of Biosolids

The beneficial reuse of biosolids in California generally must comply with the California Water Code in addition to 40 CFR Part 503 (described above), but California does not have delegated authority to implement the Part 503 rule. SWRCB Water Quality Order No. 2004-12-DWQ implements requirements of the California Water Code.[12] This order prescribes general waste discharge requirements for the use of biosolids as a soil amendment.[13] While the order discusses generators of biosolids (such as the SEP), the order only applies to dischargers (entities that apply

[10] United States Environmental Protection Agency (USEPA), *Guide to Part 503 Rule,* Chapter 1, Use or Disposal of Sewage Sludge Biosolids, June 28, 2002.
[11] USEPA, Water: Sewage Sludge (Biosolids), Frequently Asked Questions. Available online at http://water.epa.gov/polwaste/wastewater/treatment/biosolids/genqa.cfm. Accessed on June 5, 2015.
[12] SWRCB, Biosolids, 2013. Available online at http://www.waterboards.ca.gov/water_issues/programs/biosolids/. Accessed on September 11, 2015.
[13] SWRCB, Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (General Order), July 22, 2004.

the biosolids to the land).[14] The standard operating procedures applicable to dischargers must include a spill response and contingency plan, vector and odor control, avoidance of introduction of any materials that could cause upset of the treatment process, and operation and maintenance procedures. Without securing coverage under Order No. 2004-12-DWQ, application of biosolids as soil amendment at agricultural, horticultural, silvicultural, or land reclamation sites is not permitted. The order does not preempt or supersede the authority of local agencies to prohibit, restrict, or control the use of biosolids subject to their control as allowed under current law.

The Bayside NPDES Permit requires compliance with federal and state regulations for management of SEP biosolids. The permit specifies that the biosolids must be pre-treated and monitored to determine the concentration of organic compounds, selected metals, and cyanide. The permit also indicates that the biosolids must be disposed of, managed, or used in a municipal solid waste landfill; through land application; as a Class A compost; through a waste-to-energy facility or another recognized and approved technology; in a sludge-only landfill; or in a sewage sludge incinerator in accordance with 40 CFR Part 503.

Senate Bill 610 – Water Supply Assessments

Senate Bill (SB) 610[15] requires local water providers to conduct a water supply assessment (WSA) for projects proposing over 500 housing units, 250,000 square feet of commercial office space (or more than 1,000 employees), a shopping center or business establishment with over 500,000 square feet (or more than 1,000 employees), or equivalent usage. Guidance from the Department of Water Resources regarding this law states that the city or county in which a project would occur would need to work with the water supplier to determine if the demand associated with a project would be equivalent to or greater than the demand for a 500-unit residential project in that jurisdiction. Pursuant to this guidance, in 2013 the SFPUC provided its determination of the threshold value for identifying equivalent projects in San Francisco, described below in Section 4.12.2.3.

California Urban Water Management Planning Act – Water Supply Planning

The 1983 California Urban Water Management Planning Act[16] requires every urban water supplier to prepare and adopt a UWMP and update it every five years. The UWMP must describe demographic factors affecting water management planning (such as projected population changes), describe and quantify (if possible) existing and planned sources of water available to the supplier in five-year increments to 20 years or as far as data are available, and describe the reliability and vulnerability of the water supply. The UWMP must include all water supply projects and programs that may be undertaken by the urban water supplier to meet the total projected water demand.

[14] Ibid.
[15] SB 610 is codified in California Public Resources Code Sections 10910-10915.
[16] California Water Code Sections 10610-10656, as amended.

California Integrated Waste Management Act – Waste Diversion

The California Integrated Waste Management Act of 1989,[17] enacted through Assembly Bill (AB) 939 and modified by subsequent legislation, requires all California cities and counties to implement programs 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. A jurisdiction's diversion rate is the percentage of its total waste that it diverts from disposal through reduction, reuse, recycling, and composting programs. The law requires all California counties in coordination with their respective cities to develop and implement integrated waste management plans. As part of their integrated waste management plans, counties must ensure that a minimum of 15 years of disposal capacity is available to serve the county and its cities. Since 2007, the achievement of waste diversion rates has been measured based on per capita disposal rates, expressed in pounds per person per day of wastes disposed of in landfills. To achieve the target waste diversion rates, the California Department of Resources Recycling and Recovery (CalRecycle) has established a target disposal rate of 6.6 pounds per person per day in San Francisco in 2014.[18]

In 2011, California's Mandatory Commercial Recycling Law (AB 341) established a policy goal for California to source-reduce, recycle, or compost not less than 75 percent of the solid waste generated by 2020 and requires businesses and public entities that generate 4 cubic yards (cy) or more of commercial solid waste per week, and multi-family entities with five units or more, to arrange for recycling services.

4.12.2.3 Local Regulations

SFPUC Water Code Section 10912(a)(7) – Equivalent Project Threshold

Pursuant to SB 610, any project that would require potable water usage equivalent to or greater than the demand associated with a 500-unit residential project is required to prepare a WSA to determine whether water supplies would be adequate to serve the project. Based on citywide demand analysis, the SFPUC determined that an equivalent project in San Francisco would be any project using an average of 50,000 gpd or 18.25 million gallons per year.[19] The increase in potable water use under the BDFP would be more than 50,000 gpd; therefore, a WSA is required for the project.

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[17] California Public Resources Code Division 30, Sections 40000-49620.

[18] CalRecycle, Jurisdiction Diversion/Disposal Rate Detail for San Francisco, Reporting Year 2014, 2015. Available online at http://www.calrecycle.ca.gov/LGCentral/Reports/DiversionProgram/JurisdictionDiversionDetail.aspx?JurisdictionID=438&Year=2014. Accessed on October 13, 2015.

[19] SFPUC, Memorandum to Sarah Jones, Acting Environmental Review Officer, San Francisco Planning Department – Environmental Planning: Water Code Section 10912(a)(7) "Equivalent" Project Threshold, March 8, 2013.

San Francisco Public Works Code, Article 21 – Restriction of Use of Potable Water for Soil Compaction and Dust Control Activities

Article 21 of the San Francisco Public Works Code prohibits the use of potable water supplies for soil compaction and dust control in conjunction with construction or demolition project when alternative supplies are available. Non-potable water used for these purposes must be transported and used in accordance with state and local standards and regulations. Projects subject to this ordinance may use recycled water produced at the SEP that is dispensed via a truck-fill station to contractors, city departments, and other interested parties. Between 2014 and 2015, the annual volume of recycled water dispensed from this station increased from about 300,000 to 739,000 gallons (an average of 0.001 to 0.002 mgd).[20]

Recycled water is limited to the following activities within City boundaries: dust control, soil compaction, street cleaning, roadway landscape irrigation, and sewer flushing. In accordance with the SWRCB General Waste Discharge Requirements for Recycled Water Use (Order WQ 2014-00900-DWQ), aerial spraying is not allowed.

San Francisco Public Works Code, Article 4.2 Section 147 – Stormwater Management

Development projects that discharge stormwater to either the combined sewer system or a separate stormwater system must comply with Article 4.2 of the San Francisco Public Works Code, Section 147 (last updated in April, 2016). The SFPUC and the Port have developed the San Francisco Stormwater Management Requirements and Design Guidelines in accordance with the requirements of Article 4.2, Section 147 and the Small MS4 General Stormwater Permit.

Stormwater Management Requirements and Design Guidelines

In accordance with the San Francisco Stormwater Management Requirements and Design Guidelines, developers of projects that create and/or replace 5,000 square feet or more of impervious surfaces and discharge to the combined sewer system or 2,500 square feet or more of impervious surface in separate sewer areas must implement best management practices (BMPs) to manage the flow rate and volume of stormwater entering the combined sewer system by achieving Leadership in Energy and Environmental Design (LEED®) Sustainable Sites Credit 6.1 (Stormwater Design: Quantity Control). This credit includes two standards for post-construction stormwater controls depending on the amount of existing impervious surfaces. For covered projects with 50 percent existing impervious surfaces or less, the stormwater management approach must prevent the stormwater runoff flow rate and volume from exceeding existing conditions for the one- and two-year 24-hour design storm. For covered projects that include more than 50 percent existing impervious surfaces, the stormwater management approach must reduce the existing stormwater runoff flow rate and volume by 25 percent for a two-year 24-hour design storm.

[20] SFPUC, *2015 Urban Water Management Plan for the City and County of San Francisco*, June, 2016.

Modified Compliance Program

The City has developed the Modified Compliance Program to allow development projects with proven site challenges and limitations to modify the standard stormwater performance requirements set by the Stormwater Management Requirements and Design Guidelines. The Modified Compliance Program applies only to projects served by the combined sewer system. In order to qualify for modified compliance, a site owner must submit a modified compliance application to the SFPUC that documents existing and proposed site features that limit infiltration such as high groundwater, shallow depth to bedrock, poorly infiltrating soils, steep slopes, contamination, or limited space for infiltration. The application also requires the applicant to estimate the non-potable demand for the project if the project is subject to the City's Recycled Water Ordinance. Based on this information, the SFPUC can decrease the amount the applicant must reduce the stormwater runoff volume, and would increase the required flow rate reduction by the same percentage.

San Francisco Construction and Demolition Debris Management

The requirements described below apply to the BDFP.

Section 708 of the San Francisco Environment Code mandates the reduction and recycling of construction and demolition debris generated at City-owned facilities. This section applies to all construction and demolition projects implemented by City agencies, regardless of size, and requires that contractors on City projects divert at least 75 percent of construction and demolition debris from landfill disposal. The contractor is also prohibited from sending any construction or demolition debris to a landfill without receiving approval from the San Francisco Department of the Environment (SFDE). The City's construction contract for the project must require implementation of a Construction and Demolition Debris Management Plan. The plan must demonstrate how the 75 percent diversion rate will be accomplished and is subject to approval by the City. The construction contract must also require that the contractor submit a Final Diversion Report documenting the diversion rate for the project.

Chapter 14 of the Environment Code also mandates the recycling of construction and demolition debris generated from both private and City-sponsored projects in San Francisco. This chapter affects all construction projects that would generate one cubic yard or more of construction and demolition debris and requires that all construction and demolition wastes be taken to a registered facility that is certified by the SFDE to receive these wastes. These facilities must recycle or reuse at least 65 percent of all construction waste received. The SFDE maintains a list of registered transporters and facilities.

San Francisco Zero Waste Policy

Achieving zero waste means diverting all wastes from landfills and incineration. In 2002, the San Francisco Board of Supervisors set goals of achieving 75 percent diversion by 2010 and zero solid waste by a date determined once the 50 percent diversion goal was met (Ordinance 679-02). The goal of 50 percent landfill diversion was met in 2001, and the San Francisco Commission on the Environment accordingly established a goal of achieving zero solid waste by 2020 in

Resolution 002-03-COE.[21] This resolution directs the SFDE to develop policies and programs to achieve zero waste by methods such as increasing producer and consumer responsibility. The goal of 75 percent landfill diversion was met in 2008 through the implementation of numerous programs and efforts by the City.

To further the City's progress towards achieving zero waste, San Francisco Ordinance No. 1009, the Mandatory Recycling and Composting Ordinance passed by the San Francisco Board of Supervisors in 2009, requires all of San Francisco to separate recyclables, compostables, and trash to be landfilled. Under this ordinance, it is unlawful to mix recyclables, compostables, or trash, or to deposit refuse of one type in a collection container designated for another type of waste.

4.12.3 Impacts and Mitigation Measures

4.12.3.1 Significance Criteria

The project would have a significant effect on utilities and service systems if it were to:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements;
- Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Affect compliance with federal, state, and local statutes and regulations related to solid waste.

The following topics are not analyzed further in this section for the reasons described below:

- ***Exceedance of Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board.*** Section 4.16, Hydrology and Water Quality, addresses this criterion.

[21] San Francisco Commission on the Environment, Resolution No. 002-03-COE, Resolution Adopting a Date of 2020 for San Francisco to Achieve the Goal of Zero Waste to Landfill and Directing the Department of the Environment to Develop Policies and Programs to Increase Producer and Consumer Responsibility in Order to Achieve the Zero Waste Goal, March 6, 2003. Available online at http://sfenvironment.org/sites/default/files/editor-uploads/zero_waste/pdf/resolutionzerowastedate.pdf. Accessed on December 28, 2015.

- ***Require or Result in the Construction of New Water or Wastewater Treatment Facilities or Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects.***

  – Regarding water facilities, Impact UT-4, below, addresses the sufficiency of existing water supplies as well as the need for new water treatment facilities during operation of BDFP facilities. The bullet below addressing the sufficiency of existing water supplies during construction also addresses the need for new water treatment facilities during construction of BDFP facilities.

  – Regarding wastewater facilities, the project itself proposes the construction of wastewater treatment facilities. However, neither construction nor operation of BDFP facilities would substantially increase the number of employees at the SEP or otherwise result in conditions that would increase in wastewater flows at the SEP. Refer to other sections in this environmental impact report (EIR) for a description of impacts and mitigation measures associated with construction and operation of the BDFP.

- ***Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects.*** The project includes construction of new stormwater drainage facilities at the project site and would reduce the volume of stormwater flows to the combined sewer system by up to 25 percent in accordance with the Stormwater Management Requirements and Design Guidelines. Refer to other sections in this EIR for a description of impacts and mitigation measures associated with construction and operation of the BDFP. In the future, runoff from roadways and new structures would be routed to existing combined sewer system infrastructure. There would be no change in stormwater runoff volumes at the staging areas; therefore, there would be no need for additional stormwater drainage capacity.

- ***Have Insufficient Water Supply Available from Existing Entitlements and Resources, or Require New or Expanded Water Supply Resources or Entitlements During Construction.*** During construction, the project would intermittently use non-potable water for dust control in accordance with Article 21 of the San Francisco Public Works Code and would use relatively small amounts of potable water for some site needs such as drinking water, on-site sanitary needs, pressure washing, and cement mixing. The small increase in potable water use would be temporary, terminating with the completion of construction. Water supplies are planned such that short-term spikes in potable use can be accommodated and there would be no need for new or expanded water supplies or water treatment facilities. For these reasons, this criterion is not applicable to project construction. Potable water use during operation is addressed in Impact UT-4.

- ***Result in a Determination by the Wastewater Treatment Provider that Would Serve the Project that it has Inadequate Capacity to Serve the Project's Projected Demand in Addition to the Provider's Existing Commitments during Operation.*** The project consists of the replacement of solids handling and related facilities at the SEP. The project would not increase the number of employees at the SEP and would not increase wastewater or stormwater flows to the SEP. For these reasons, this criterion is not applicable to project operations. Impacts related to wastewater capacity during construction are addressed in Impact UT-1.

4.12.3.2 Approach to Analysis

Construction and Operational Impacts

This section provides an analysis of the potential for project implementation to adversely affect wastewater treatment capacity, landfill capacity, compliance with solid waste regulations, and water supply. With respect to wastewater treatment capacity, the analysis compares the quantity of wastewater that would be generated during construction to available treatment capacity. For landfill capacity and compliance with solid waste regulations, the analysis compares the quantity of solid waste that would be generated, adjusted to reflect applicable waste diversion regulations, with available landfill capacity. For water supply, the analysis relies on the Water Supply Assessment (WSA) that was prepared for the project and approved by the SFPUC to characterize whether supplies are sufficient to meet the potable water demand associated with BDFP facilities operations, which in turn relies on the latest approved 2015 UWMP.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes reasonably foreseeable future projects in the vicinity of the project that could contribute to a cumulative impact; please refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects in the vicinity of the BDFP.

For impacts related to water supply, the analysis relies on the project's WSA and considers whether the water demand of the project is accommodated within the projections of the 2015 UWMP, consistent with CEQA Guidelines 15130(b)(1)(B). For all other impacts, the cumulative analysis for Utilities and Service Systems uses a list-based approach to analyze the effects of the project in combination with other past, present, and probable future projects in the immediate vicinity, consistent with CEQA Guidelines 15130(b)(1)(A). The cumulative impact analysis assumes that construction and operations of other projects in the geographical area would be required to comply with the same regulatory requirements as the project, which would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.12.3.3 Impact Evaluation

Construction Impacts

Impact UT-1: Project construction would not result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. (Less than Significant)

During the five years of project construction, new sources of wastewater discharges to the City's combined sewer system would include wastewater resulting from sanitary needs of construction workers at the Piers 94 and 96 staging areas and SEP construction site as well as groundwater pumped from excavations at the SEP during construction-related dewatering. As described in Chapter 2, *Project Description*, Table 2-10, the maximum construction work force would be approximately 550 workers per day. Assuming that each worker would generate 2.81 gallons per day of wastewater,[22] the total increase in wastewater volumes would be about 0.001 mgd. This volume represents a miniscule increase in the 61 mgd of wastewater treated at the SEP, and this increase would be well within the 85 mgd dry weather capacity of the existing wastewater system.

Most of the excavations at the project site would be within the artificial fill materials and young bay mud that underlie the project site. These shallow excavations would be completed below the water table. Shoring systems used in the shallow excavations would minimize the amount of groundwater flow into the excavations. Alternatively, the sidewalls of the shallow excavations could be sloped to ensure slope stability, which would allow more groundwater flow into the excavation. In either case, limited dewatering would be required to maintain a dry working area within these shallow excavations.

Deeper excavations such as for the Anaerobic Digesters would extend into the upper-layered sediments that underlie the young bay mud. As discussed in Section 4.16, Hydrology and Water Quality, groundwater within this geologic unit occurs under artesian pressure and these deeper excavations could require more extensive groundwater dewatering to provide a dry work area and to reduce groundwater within the excavations. While the shoring systems used in these excavations would limit groundwater infiltration into the excavations, the volume of groundwater produced during dewatering is not known. The groundwater would be discharged to the combined sewer system, adding to the total amount of wastewater requiring treatment at the SEP. As discussed in the Setting, the remaining dry weather capacity of the SEP is about 24 mgd, and any dewatering discharge would be within this available capacity.

Based on the above analysis, discharges of both wastewater from the sanitary needs of construction workers and groundwater from construction-related excavation dewatering would be well within the remaining dry weather treatment capacity of the SEP and associated conveyance infrastructure.

[22] This calculation is based on compliance with the 2013 California Green Building Code water use baseline values provided in Table 5.3003.2.2 of the code. Construction workers are assumed to flush twice per day and the water use includes 1.28 gallons per flush and use of 0.125 gallons per flush for handwashing. The total per construction worker water use for sanitary purposes is 2.81 gallons per day.

Therefore, project construction would not require the construction or expansion of wastewater treatment facilities and would not result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments. As a result, this impact would be ***less than significant***.

Mitigation: None required.

Impact UT-2: Project construction would not result in a substantial adverse effect related to landfill capacity. (Less than Significant)

Construction of the BDFP would generate multiple types of construction and demolition debris. As summarized in Chapter 2, Table 2-13, demolition of the Asphalt Plant (subsurface) and Central Shops structures, select structures within SEP North, and the structures at 1550 Evans Avenue would generate an estimated 27,000 cubic yards (cy) of demolition debris. As indicated in Table 2-13, approximately one-third (about 9,000 cy) of demolition debris would consist of lead-containing materials or asbestos-containing waste (ACW). Site preparation would also generate excavated soil. As indicated in Chapter 2, Table 2-14, the SFPUC estimates that approximately 145,000 cy of this soil would be non-hazardous, and that another 45,000 cy of excavated soil would be considered hazardous waste. Section 4.17, Hazards and Hazardous Materials, addresses disposal of lead- and asbestos-containing demolition debris and soil classified as hazardous waste. The non-hazardous demolition debris and soil (approximately 163,000 cy) would be considered construction and demolition debris and is considered in this analysis.

Construction and demolition debris would be managed in compliance with Section 708 and Chapter 14 of the San Francisco Environment Code, and the SFPUC would comply with the specified diversion rates under these codes to reduce the amount of material for landfill disposal. In accordance with Section 708 of the San Francisco Environment Code, the SFPUC would require the construction contractor to submit a Construction and Demolition Debris Management Plan for approval; the plan would demonstrate how the project would meet the required minimum diversion rates for the 163,000 cy of project-related construction and demolition debris. The SFPUC would meet the diversion goal by recycling a portion of the non-hazardous demolition debris and beneficially reusing a portion of the soil. Approximately 9,000 cubic yards of demolition debris would be recycled at the Republic Ox Mountain disposal facility, which accepts both recyclable and non-recyclable material, and much of the non-hazardous soil would be beneficially reused. The remaining demolition debris would be landfilled at the Republic Ox Mountain disposal facility and, if beneficial uses for all of the soil are not identified by the SFPUC, the remaining non-hazardous soil could be landfilled at the Altamont Landfill or Recology Hay Road Landfill.

As shown in **Table 4.12-3**, the landfills designated by the SFPUC for this project have sufficient capacity to accommodate the identified solid waste disposal needs during construction. As a result, the impact of the BDFP on landfill capacity would be ***less than significant***.

TABLE 4.12-3
REMAINING DISPOSAL SITE CAPACITIES AND VOLUME OF WASTES REQUIRING DISPOSAL DURING PROJECT CONSTRUCTION

Landfill Name	Remaining or Permitted Capacity	BDFP Materials Type	Waste Generated by Project Requiring Disposal (cubic yards)
Recology Hay Road, ACW Disposal Site, Solano County	Maximum Permitted Capacity: 20,656,000 cy	Lead/asbestos	9,000
Altamont ACW Disposal Site, Alameda County	Maximum Permitted Capacity 40,000,000 cy		
Republic Ox Mountain, San Mateo County	Remaining Capacity: 22,180,000 cy	Non-recyclable waste	9,000[a]
Recology Hay Road, Solid Waste, Solano County	Remaining Capacity: 30,433,000 cy	Non-hazardous excavated soil	48,050[a]
Altamont Landfill, Alameda County	Remaining Capacity: 45,720,000 cy		

NOTE:
[a] The project would generate an estimated 163,000 cy of non-hazardous construction and demolition waste; at a minimum, 65% of this waste (105,950 cy) would be recycled, and the remainder (including 9,000 cy of non-hazardous demolition debris and 48,050 cy of soil) is assumed to require disposal.

SOURCE: CalRecycle, Facility/Site Summary Details: Recology Hay Road (48-AA-0002), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/48-AA-0002/Detail/, accessed September 4, 2015; CalRecycle, Facility/Site Summary Details: Corinda Los Trancos Landfill (Ox Mtn) (41-AA-0002), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/, accessed October 6, 2016; CalRecycle, Facility/Site Summary Details: Altamont Landfill & Resource Recovery (01-AA-0009), available online at http://www.calrecycle.ca.gov/SWFacilities/Directory/01-AA-0009/Detail/, accessed September 8, 2015; E-mail from David Huffman, Industrial Account Manager for Waste Management Solutions to Mary McDonald of Orion Environmental Associates, Altamont Landfill Capacity Information, July 12, 2016.

Mitigation: None required.

Impact UT-3: Project construction would not result in a substantial adverse effect related to compliance with federal, state, or local statutes and regulations related to solid waste. (Less than Significant)

All disposal facilities identified by the SFPUC for disposal and recycling of construction and demolition debris are permitted for the types of waste generated by project construction. As discussed in Section 4.12.2, 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. In addition, San Francisco's Zero Waste Policy establishes a goal of zero waste by 2020, which entails diverting all wastes from landfills. Reports filed by the SFDE show that the City generated approximately 870,000 tons of waste material in 2000.[23] By 2010, that figure decreased to approximately 455,000 tons.[24] As of 2015, San Francisco disposed of 568,200 tons of waste (or 3.7 pounds per person per day), well below the California Integrated Waste Management Act target rate for San Francisco of 6.6 pounds per person per day.[25]

Recycling construction and demolition debris helps local jurisdictions meet state and local waste diversion goals. As described under Impact UT-2, the SFPUC or its construction contractor would prepare a Construction and Demolition Debris Management Plan demonstrating how the project would achieve the diversion requirement. The plan would include a list of all material types and volumes anticipated during demolition, the market or destination for the material, the estimated landfill diversion, and the anticipated transporter for the material. With the implementation of the plan, BDFP construction would be in compliance with state or local statutes related to solid waste, and this impact would be ***less than significant***.

Mitigation: None required.

Operational Impacts

Impact UT-4: The City's water supply provider would have sufficient water supply available to serve project operations from existing entitlements and resources, and the project would not require new or expanded water distribution or treatment facilities. (Less than Significant)

As described above, the SEP receives potable water (No. 1 water) from the SFPUC water system and also uses non-potable No. 2 and No. 3 water produced on site. As indicated in Table 2-6 in Chapter 2, *Project Description*, with implementation of the BDFP, potable water demand for biosolids handling would increase from 43,200 gpd to 205,300 gpd (2045), an increase of approximately 162,100 gpd (0.16 mgd). This increase would largely be due to proposed changes in processes (in particular, the cooling tower for the thermal hydrolysis process, energy recovery facilities, and heating, ventilation, and air cooling systems). Maintenance Shops 1 and 2 would also require potable water service connections for employee use such as toilet and urinal flushing and hand washing. Pursuant to SB 610 and the SFPUC's guidance on equivalent water usage under this law (described in Section 4.12.2), if a project requires at least 50,000 gpd of potable water, then a WSA must be prepared for the project.

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[23] CalRecycle, Single Year Countywide Origin Detail, County of: San Francisco, Year: 2000. Available online at http://www.calrecycle.ca.gov/LGCentral/Reports/Viewer.aspx?P=ReportName%3deDRSCountyWideOrigin%26CountyID%3d38%26ReportYear%3d2000, accessed on December 9, 2016.

[24] CalRecycle, Single Year Countywide Origin Detail, County of: San Francisco, Year: 2010. Available online at http://www.calrecycle.ca.gov/LGCentral/Reports/Viewer.aspx?P=ReportName%3deDRSCountyWideOrigin%26CountyID%3d38%26ReportYear%3d2010, accessed on December 9, 2016.

[25] CalRecycle, Jurisdiction Diversion/Disposal Rate Detail for San Francisco, Reporting Year 2014, 2015. Available online at http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionDetail.aspx?JurisdictionID=438&Year=2015. Accessed on December 9, 2016.

The SFPUC approved and adopted the WSA for the BDFP (included in **Appendix WSA**) in March, 2017. The WSA concluded that the 0.16 mgd increase in demand attributable to the project is not reflected in the retail water demands estimated in the 2015 UWMP, but the demands are incremental and would not substantiate the need for additional supplies. The increased demand is projected to result in a shortfall of 0.2 mgd in most year types (i.e., normal year, single dry year) beginning in 2025; by 2040, the shortfall is projected to be 1.3 mgd during a multi-year drought. These shortages represent less than 0.5 percent of the water supplies during most years, and approximately 1.4 percent of the water supply during a multi-year drought in 2040 and could be offset through increases in deliveries from the regional water system, implementation of voluntary conservation measures, or water rationing. Therefore, as confirmed by the SFPUC, existing water supplies serving the City would be sufficient to meet the projected increase in water demand for the project, and the project would not trigger the need for new or expanded water supply resources or entitlements, or the need for new water treatment facilities. Impacts related to water supply and the need for new or expanded water treatment facilities would be ***less than significant***.

To assess the need for improvements to the existing water distribution systems, the SFPUC City Distribution Division would conduct a hydraulic analysis to confirm that the existing system is adequate to meet the project's water demands, including fire suppression system pressure and flow demands. If the infrastructure is inadequate to meet the project's demand, the SFPUC would modify the water conveyance system, such as upsizing the water mains and appurtenances. The construction of larger facilities could require a limited amount of excavation, trenching, soil movement, and other activities typical of construction of development projects in San Francisco and generally within public rights-of way. These activities, if determined to be required, would be similar to those associated with construction of the project, and these activities would not result in significant environmental effects not already disclosed in this EIR for the BDFP. Therefore, impacts related to requiring the construction of new water treatment facilities or expansion of existing facilities would be ***less than significant***.

Mitigation: None required.

Impact UT-5: Project operations would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. (Less than Significant)

As indicated in Chapter 2 (Section 2.5.2, Plant Capacity, Operating Hours, and Work Force), no increase in the existing operating staff levels for the SEP is anticipated for the project. Therefore, the amount of municipal solid waste generated by SEP staff would not be expected to increase.

Operation of the proposed digester gas treatment facilities would regularly produce two types of solid waste: approximately 140 cy or 10 truckloads of iron sponge media waste every year and approximately 680 cy or 48 truckloads of siloxane media waste (granulated activated carbon or an alternative media) every year. In general, the spent media are classified as non-hazardous waste based on pre-disposal sampling.[26] However, occasionally, the spent media exhibit a low pH resulting in classification as a hazardous waste. Spent media that are not hazardous waste would be trucked to an appropriate landfill for disposal, such as the Recology Hay Road, Altamont, or Republic Ox Mountain landfills. The approximately 820 cy of spent media requiring disposal that would be produced each year would constitute a small fraction of available landfill capacity in the study area. The approximately 24,600 cy that would be generated over 30 years represents much less than 1 percent (0.03 percent) of the combined 76 million cy remaining capacity of the three potential landfills, and 0.1 percent of the remaining capacity of the landfill with the least remaining capacity (Ox Mountain). Therefore, the volume of wastes produced during operation of the project would not exceed the capacity of these landfills. The disposal of hazardous wastes is addressed in Section 4.17, Hazards and Hazardous Materials.

The project would also generate Class A biosolids for beneficial reuse. The SEP produced about 13,000 dry tons of Class B biosolids in 2015. Without the project, this production rate would increase to 27,700 dry tons of Class B biosolids annually by the year 2045 as summarized in Chapter 2. With implementation of the BDFP, the SEP would produce up to 24,000 dry tons of biosolids per year as summarized in Table 2-1 in Chapter 2. This is less volume than would be produced without the project, but an increase of about 11,000 dry tons of biosolids per year compared to existing production. The quality would also be upgraded to Class A biosolids. As described in Section 4.12.1.4, Class B biosolids produced at the SEP are currently beneficially reused primarily as alternative daily cover at landfills or, with certain restrictions, for land application in agricultural areas. Under the project, the Class A biosolids would have no detectable levels of pathogens and would not attract vectors, thereby expanding the options for beneficial reuse of these materials. Depending on market conditions, the Class A biosolids could be reused at sites throughout the San Francisco Bay Area. One of the objectives of the BDFP is to beneficially reuse 100 percent of biosolids generated at the SEP in the future. The production of Class A biosolids would increase the potential uses and marketability of the biosolids to support this project objective because the biosolids could be used for more purposes such as fertilizer and soil conditioning. As this is an objective of the project, it is presumed for purposes of this analysis that the biosolids produced in the future would all be beneficially reused. For this reason, the production of biosolids under the BDFP would not affect permitted capacity of solid waste disposal facilities.

Based on the discussions above, the volume of wastes produced under the project would be well within the remaining capacity of the landfills proposed for waste disposal, and the Class A biosolids produced under the project would not be landfilled but would be beneficially reused. Therefore, impacts related to exceeding the capacity of a landfill would be ***less than significant.***

Mitigation: None required.

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26 SFPUC, *BDFP Conceptual Engineering Report*, Appendix F, March 2016.

Impact UT-6: Project operations would not result in a substantial adverse effect related to compliance with federal, state, or local statutes and regulations related to solid waste. (Less than Significant)

Once the project is operational, solid waste generated by the BDFP, including non-hazardous spent media, would be sent to permitted landfills for disposal as described in Impact UT-5. This disposal would not result in an inconsistency or violation of permit conditions at these facilities because the facilities are permitted and have adequate capacity to accept these non-hazardous wastes. SFPUC operations would also sort recyclables, compostables, and trash according to the Mandatory Recycling and Composting Ordinance consistent with the City's zero waste goal.

Regarding biosolids regulations, SFPUC would apply current practices for ensuring compliance with federal and state statutes to BDFP's production of Class A biosolids. The SFPUC currently uses multiple contractors to handle biosolids produced at the SEP and has implemented a Biosolids Management System.[27] As part of this system, the SFPUC has identified a Biosolids Management Coordinator who maintains an active role in ensuring that its biosolids handling contractors are complying with legal requirements. The SFPUC is required to submit an annual report to USEPA Region 9 in compliance with federal regulations. The SFPUC also inspects contractor application of biosolids in Solano County monthly to ensure compliance with regulations.[28] During land application season, the Biosolids Management Coordinator and staff from the SFPUC perform inspections to ensure compliance with all legal requirements.[29] The SFPUC also implements operational controls to ensure that biosolids are produced and handled in ways that are compliant with federal, state, and local laws. These controls include a spill control plan for biosolids at load-out, visual inspections at load-out to ensure proper tarp covering of biosolids, and use of certified scales at the SEP to limit the potential for trailers to overturn as a result of overfilling.[30]

Disposal of spent media during operation of the BDFP would not violate the permit conditions of the landfills used for disposal for the reason cited above, and the SFPUC would sort recyclables, compostables, and trash according to San Francisco's Mandatory Recycling and Composting Ordinance. In addition, beneficial reuse of the biosolids produced during operation would continue to comply with 40 CFR Part 503 as ensured with implementation of the SFPUC's Biosolids Management System. Therefore, impacts related to compliance with solid waste regulations would be ***less than significant.***

Mitigation: None required.

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[27] SFPUC, *Biosolids Management System (BMS) Manual: SFPUC Wastewater Enterprise*, April 2015.
[28] Bay Area Clean Water Agencies, *Annual Report to the Solano County Board of Supervisors Land Application of Biosolids in Solano County*, December 2014.
[29] SFPUC, *Biosolids Management System (BMS) Manual: SFPUC Wastewater Enterprise*, April 2015.
[30] Ibid.

Cumulative Impacts

Impact C-UT-1: The project, in combination with past, present, and probable future projects, would not result in significant cumulative impacts on utilities and service systems. (Less than Significant)

Adequacy of Wastewater Treatment Capacity

The geographic scope of impacts on wastewater treatment capacity is the area served by the SEP (in general, the east side of San Francisco). As discussed in Impact UT-1, the project would temporarily increase wastewater flows to the SEP during construction, resulting from the sanitary needs of construction workers and excavation dewatering. While other projects proposed in the city (including those listed in Table 4.1-1) could also involve construction-related discharges, these discharges are temporary in nature and do not typically involve the discharge of large volumes of wastewater. Many of the development projects listed in Table 4.1-1 (e.g., the Candlestick Point-Hunters Point Shipyard Phase I and II Development Project, Event Center and Mixed Use Development at Mission Bay Blocks 20-32, and Pier 70 Waterfront Site) would increase wastewater flows to the combined sewer system year-round as a result of planned population growth. However, the SFPUC projects that total wastewater flows to the SEP will increase to 69 mgd by the year 2045 and the planned growth under these cumulative projects is encompassed within this projection. With respect to the wastewater system as a whole, the Sewer System Improvement Program is being implemented to ensure the long-term reliability of the system. Because the projected wastewater flows are well within the existing 85 mgd dry weather treatment capacity of the SEP, cumulative impacts related to a determination that the SEP would have inadequate wastewater treatment capacity would be ***less than significant***.

Landfill Capacity and Compliance with Federal, State, or Local Statutes and Regulations Related to Solid Waste

For landfill capacity, the geographic scope includes the service areas of San Francisco, Alameda, Solano, and San Mateo Counties, where recycling, reuse, and disposal of wastes could occur. For compliance with solid waste statutes and regulations, the geographic area encompasses San Francisco and the overall San Francisco Bay Area.

As discussed in Impact UT-2, Chapter 14 and Section 708 of the San Francisco Environment Code would require the SFPUC to prepare a Construction and Demolition Debris Management Plan demonstrating how project-related construction and demolition debris would be diverted from landfill disposal. During operation, the project would also implement measures to achieve zero waste in accordance with San Francisco's Zero Waste Policy as discussed in Impact UT-6. All San Francisco projects would be required to implement these or similar regulatory requirements, and there is sufficient landfill capacity as discussed in Impacts UT-2 and UT-5. Further, one of the objectives of the BDFP is to produce Class A Exceptional Quality biosolids, which have fewer restrictions for land applications such as soil conditioning and fertilizer. Accordingly, 100 percent of the biosolids produced by wastewater treatment processes at the SEP would be beneficially reused at sites throughout the San Francisco Bay Area. Therefore, cumulative impacts related to exceeding landfill capacity and compliance with federal, state, or local statutes and regulations related to solid waste would be ***less than significant.***

Water Supply

The geographic scope of impacts on water supply is the water service area of the SFPUC. As described in Impact UT-4, the SFPUC has approved and adopted a WSA for the BDFP concluding that there are adequate potable water supplies in the regional water system to serve the project's estimated water demand of 0.16 mgd (average) and cumulative demand during normal years, single dry years, and multiple dry years from 2020 through 2040 based on water demand and supply projections in the SFPUC's 2015 UWMP.[31] Because the 2015 UWMP incorporates projections for future cumulative development in the city and the WSA determined that the project would be consistent with the 2015 UWMP, the cumulative impacts on water supply and the need for new or expanded water treatment facilities would be ***less than significant***, and no mitigation is necessary.

Mitigation: None required.

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31 Public Utilities Commission, City and County of San Francisco, *Resolution No. 16-0095 approving May 24, 2016 Water Supply Assessment for the Pier 70 Project*, May 24, 2016.

4.13 Public Services

This section describes the existing conditions and regulatory setting for public services (law enforcement, fire protection, emergency, and school services) in the vicinity of the Biosolids Digester Facilities Project (BDFP or project) and assesses potential impacts on public services that could result from implementation of the project. Mitigation measures are identified to avoid or reduce significant adverse impacts, as appropriate. Public services addressed in this section include law enforcement services, fire protection services, and emergency services. Regarding impacts to parks, refer to Section 4.11, Recreation. Regarding emergency access, refer to Section 4.6, Transportation and Circulation.

4.13.1 Setting

4.13.1.1 Law Enforcement Services

Both the San Francisco Police Department (SFPD) and San Francisco Sheriff's Department provide law enforcement services in San Francisco. The SFPD is mandated by City Charter to maintain a full-duty sworn staff of 1,971, excluding officers assigned to the San Francisco International Airport and officers on temporary modified duty or leave.[1] In 2014 the SFPD had 1,691 full-duty sworn officers and a total full time staff of 2,581.[2] Since 2012 the City and County of San Francisco (CCSF) has been implementing a six-year plan to add officers annually through 2018 to reach the charter-mandated level.[3] The project site and off-site staging areas are located in the 7.4-square-mile Bayview Police District, which covers the southeastern part of San Francisco.[4] The Bayview Police District is bounded by Cambridge Street to the west, San Francisco Bay to the east, Mariposa Street to the north, and the San Mateo County line to the south.[5,6] The Bayview Police Station is located at 201 Williams Avenue, less than one mile from the project site. Officers may be dispatched from other nearby stations during an emergency. **Table 4.13-1** lists the Bayview Police Station and nearest surrounding police stations.

The SFPD maintains a relationship with the San Francisco Public Utilities Commission (SFPUC) through the SFPUC Liaison, who provides site inspections and makes recommendations for safeguarding water supplies.[7]

1 San Francisco Police Department, *San Francisco Police Department 2014 Annual Report Together We Can*, 2014.
2 Ibid.
3 City and County of San Francisco, Mayor Lee Announces Long Term and Comprehensive Hiring Plan for City's Police and Fire. Available online at http://sfmayor.org/mayor-lee-announces-long-term-comprehensive-hiring-plan-city%E2%80%99s-police-fire-0. Accessed January 9, 2017.
4 Public Safety Strategies Group LLC, *District Station Boundary Analysis Report*, Table 23: Proposed District Boundary Lines – Data, Submitted to City and County of San Francisco Controller's Office, March 3, 2015.
5 San Francisco Police Department, Bayview Station, 2015. Available online at http://sf-police.org/index.aspx?page=798. Accessed on August 28, 2015.
6 San Francisco Police Department Crime Analysis Unit, *City and County of San Francisco Bayview District*, July 23, 2015. Available online at http://sanfranciscopolice.org/Modules/ShowDocument.aspx?documentID=27555. Accessed January 9, 2017.
7 San Francisco Police Department, *San Francisco Police Department 2014 Annual Report Together We Can*, 2014.

TABLE 4.13-1
POLICE STATIONS IN PROJECT VICINITY

Police Station	Address	Approximate Location Relative to Project Site
Bayview	201 Williams Avenue	< one mile south
Ingleside	1 Sgt. John V. Young Lane	three miles southwest
Southern	1251 Third Street	two miles north
Mission	630 Valencia Street	two miles northwest

SOURCE: San Francisco Police Department, District Stations and Map, 2015. Available online at http://sf-police.org/index.aspx?page=796. Accessed on October 27, 2015.

The San Francisco Sheriff's Department manages the San Francisco County Jail, protects City-owned critical infrastructure, and augments law enforcement at the request of the SFPD.

4.13.1.2 Fire Protection Services

The San Francisco Fire Department (SFFD) provides fire protection services in San Francisco. The SFFD also responds to other emergency situations, including hazardous materials incidents, and provides medical aid and fire prevention and safety training. In the event of a fire emergency within the project vicinity, the SFFD would be dispatched as the first response team. **Table 4.13-2** summarizes the SFFD stations within one mile of the project site or off-site staging areas. Station No. 9 is located on Jerrold Avenue approximately one-half mile northwest of the project site.

TABLE 4.13-2
FIRE STATIONS IN PROJECT VICINITY

Fire Station No.	Address
9	2245 Jerrold Avenue at Upton Street
17	1295 Shafter Avenue at Ingalls Street
25	3305 Third Street at Cargo Way
37	798 Wisconsin Street at 22nd Street
42	2430 San Bruno Avenue at Silver Avenue
49	1415 Evans Avenue at Mendell Street

SOURCE: San Francisco Fire Department, Fire Station Locations, 2015. Available online at http://www.sf-fire.org/index.aspx?page=176. Accessed on October 14, 2015.

In 2012 the City initiated a six-year hiring plan to restore SFFD staffing levels that have been reduced due to retired personnel.[8] The SFFD expects to increase the number of staff in the area, and to request the opening of one to two new fire stations to serve the southeastern part of San Francisco, due to

[8] City and County of San Francisco, Mayor Lee Announces Long Term and Comprehensive Hiring Plan for City's Police and Fire. Available online at http://sfmayor.org/mayor-lee-announces-long-term-comprehensive-hiring-plan-city%E2%80%99s-police-fire-0. Accessed January 9, 2017.

overall growth in the city[9] (although the additional planned stations are not within the vicinity of the project site). The average response time of the SFFD during the past year in the vicinity of the project site is just over five minutes.[10]

4.13.1.3 Emergency Services

The San Francisco Department of Emergency Management (DEM) leads the City in planning, preparedness, and communication for, and response to and recovery from, daily emergencies, large-scale citywide events, and major disasters.[11] DEM has three divisions: Emergency Communications, Emergency Services, and Administration and Support. DEM's public safety dispatchers answer incoming 911 emergency and non-emergency calls and dispatch police, fire, and medical responders. Emergency managers and planners work with disaster preparedness coordinators from numerous San Francisco departments and liaisons from regional, state, and federal partners in the response to and recovery from any type of emergency or planned event. DEM's services also include management of San Francisco's Emergency Medical Services Agency and the Emergency Operations Center. In general, emergency managers, planners, and disaster preparedness coordinators in the Emergency Operations Center are responsible for monitoring events, supporting field operations, coordinating citywide resources, and providing public information.[12]

4.13.1.4 Schools and Other Services

Three schools or childcare facilities are within one-quarter mile of the project site and off-site staging areas. These include two City College of San Francisco campuses, located at 1800 Oakdale Avenue (Southeast campus) and 1400 Evans Avenue (Evans campus). The City College of San Francisco is a multi-campus community college that offers overs a variety of academic and occupational programs.[13] In addition, the Wu Yee South East Child Development Center is located at 1300 Phelps Street, and provides childcare services.[14]

The San Francisco Public Library manages several libraries throughout San Francisco including the Bayview/Linda Brooks-Burton Branch Library on 5075 Third Street, approximately one-half mile from the project site.[15]

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9 San Francisco Fire Department, personal communication between Mindy Talmadge and Karen Lancelle, September 1, 2015.

10 Ibid.

11 San Francisco Department of Emergency Management, Emergency Services, 2015. Available online at http://sfdem.org/index.aspx?page=364. Accessed on October 14, 2015.

12 San Francisco Department of Emergency Management, *Annual Report FY 2013-2014*, 2014.

13 City College of San Francisco, An Overview of City College, 2016. Available online at https://www.ccsf.edu/en/about-city-college/aboutccsf.html. Accessed on June 24, 2016.

14 Wu Yee Children's Services, Early Care and Education, 2016. Available online at http://www.wuyee.org/center-based-care/. Accessed on June 24, 2016.

15 San Francisco Public Library, Bayview/Linda Brooks-Burton. Available online at http://sfpl.org/index.php?pg=0100000401. Accessed on June 27, 2016.

4.13.2 Regulatory Framework

4.13.2.1 Federal Regulations

There are no federal public services regulations or policies relevant to this analysis.

4.13.2.2 State Regulations

California Master Mutual Aid Agreement

The California Master Mutual Aid Agreement is a framework agreement between the State of California and local governments for aid and assistance by the interchange of services and facilities, including but not limited to fire, police, medical and health, communication, and transportation services and facilities to cope with the problems of rescue, relief, evacuation, rehabilitation, and reconstruction.

California Fire Code

State fire regulations are set forth in Sections 13000, et seq. of the California Health and Safety Code, which includes regulations concerning building standards (as set forth in Title 24 of the California Code of Regulations, the California Building Code), fire protection and notification systems, fire protection devices (such as fire extinguishers and smoke alarms), high-rise building and child care facility standards, and fire suppression training.

4.13.2.3 Local Regulations

San Francisco General Plan

The *San Francisco General Plan* provides general policies and objectives to guide land use decisions and development throughout the city, as described in Chapter 3, *Plans and Policies*. The Community Facilities Element of the General Plan contains objectives and policies that help meet the city's need for community facilities including police facilities and firehouses.

San Francisco Police Code

The San Francisco Police Code contains regulations for various types of activities such as automobile use, permitting and licensing, and disorderly conduct. The City's noise ordinance is also part of the Police Code (Article 29) and is relevant to this project. (Refer to the discussion of regulatory framework in Section 4.7, Noise and Vibration, of this environmental impact report [EIR].)

San Francisco Administrative Code

San Francisco Administrative Code Section 2A.86, Boundaries of Police Department District Stations, requires the Police Commission in consultation with the Chief of Police to conduct a comprehensive review of police district boundaries every 10 years and adjust those boundaries, if warranted. The goal of this requirement is to "to maximize the effectiveness of police operations and the efficient use of police resources" taking into account population data, proposed developments, the number, type and frequency of police activities, and anticipated needs for police resources, among other factors. Accordingly, in 2015 the SFPD and CCSF Controller's Office completed a police district boundary analysis and implemented new police district boundaries.[16] In addition to this municipal code requirement, the analysis was motivated by anticipated population and commercial growth throughout the city, imbalanced workloads between the police districts, and the location of the new Southern District police station.[17] As a result of the boundary analysis, the northern boundary of the Bayview District was shifted south, from Canal Street to Mariposa Street.[18]

San Francisco Fire Code

The San Francisco Fire Code was revised in 2013 to regulate and govern the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials, and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises; to provide for the issuance of permits, inspections, and other SFFD services; and to provide for the assessment and collection of fees for those permits, inspections, and services. The SFFD reviews building plans to ensure that fire and life safety is provided and maintained in the buildings that fall under its jurisdiction. SFFD building plan review applies to many occupancy types, including the following that apply to the Southeast Water Pollution Control Plant (Southeast Plant or SEP):

- All Hazardous Occupancies (including repair garages, body shops, fuel storage, and emergency generator installation)
- All Storage Occupancies where potential exists for high-piled storage as defined by Fire Code
- All fire alarm and fire suppression systems

The SFFD conducts plan checks to ensure that all structures, occupancies, and systems outlined above are designed in accordance with the San Francisco Building Code. While the SFPUC is not required to obtain a building permit, the SFFD would conduct an inspection of the BDFP.

4.13.3 Impacts and Mitigation Measures

4.13.3.1 Significance Criteria

The project would have a significant impact on public services if it were to:

- Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response

[16] Public Safety Strategies Group LLC, *District Station Boundary Analysis Report*, submitted to the City and County of San Francisco Controller's Office, March 3, 2015.
[17] Ibid.
[18] San Francisco Police Department Crime Analysis Unit, *City and County of San Francisco Bayview District*, July 23, 2015. Available online at http://sanfranciscopolice.org/Modules/ShowDocument.aspx?documentID=27555. Accessed January 9, 2017.

times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services.

Regarding impacts on parks, refer to Section 4.11, Recreation. Section 4.6, Transportation and Circulation, evaluates emergency access during construction.

4.13.3.2 Approach to Analysis

Construction and Operational Impacts

The BDFP could have a significant impact on public services if (1) it would require the construction of new or physically altered governmental facilities in order to maintain acceptable levels of public services, *and* (2) the construction or alteration of such facilities would result in one or more substantial adverse impacts on the environment.

The impact analysis below first considers whether the project would require the construction of new or altered governmental facilities (beyond those included in the project) in order to maintain acceptable performance standards for public services. If new or altered public service facilities are determined to be required to serve the project, then the analysis evaluates whether construction of such facilities would have a substantial adverse physical effect on the environment. For example, if the SFFD determined that a new fire station would need to be constructed to maintain adequate service levels for fire protection, the impact analysis would evaluate whether construction or operation of the new fire station would have significant impacts on the physical environment.

For purposes of the impact analysis, project improvements are assumed to be designed and constructed in compliance with all applicable building and fire codes, which include requirements for fire alarms, smoke detectors, sprinkler systems, fire extinguishers, and the number and location of exits.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes reasonably foreseeable future projects in the vicinity of the project that could contribute to a cumulative impact; please refer to Table 4.1-1 and Figure 4.1-1 for descriptions and locations of potential cumulative projects in the vicinity of the BDFP. The cumulative analysis for public services uses a list-based approach to analyze the effects of the project in combination with other past, present, and probable future projects in the immediate vicinity. For the public services cumulative impact analysis, future development projects considered in the analysis include those that would require the construction or physical alteration of facilities for law enforcement services, fire protection/emergency medical services, or other public services, and are in the same service district as the project. Because operation of the BDFP would not increase the existing operations staff levels, the BDFP would not have operational cumulative effects; for this reason, cumulative construction and operations impacts are analyzed together. The cumulative impact analysis assumes that construction and operation of other projects in the geographical area, listed in Table 4.1-1, would be required to comply with the same regulatory requirements as the project, which would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.13.3.3 Impact Evaluation

Construction and Operational Impacts

Impact PS-1: Construction and operation of the BDFP would not increase demand for public services to an extent that would require new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for public services. (Less than Significant)

Construction Impacts

The project area currently receives services from the service providers identified in Section 4.13.1, Setting. As described in Chapter 2, *Project Description*, construction of the BDFP would occur over a period of about 60 months and would employ an average of 333, and as many as 550, construction workers concurrently on site. Construction workers likely would come from San Francisco and other Bay Area counties. Construction workers who are residents of San Francisco are currently being served by City services and thus would not represent an increase in demand for City services. While it is possible that some workers might temporarily relocate from other areas, the project is not expected to result in a substantial increase in the local population (as described in Section 4.4, Population and Housing) and thus not expected to result in increased response times such that new or physically altered facilities would be required to maintain service. Incidents could occur during construction requiring law enforcement, fire protection, or emergency medical services. However, this analysis presumes that any incremental increase in demand for these services during construction would be temporary, could be accommodated by existing services, and would not require construction of new or physically altered facilities to maintain service. Therefore, the impact of BDFP construction on public services would be less than significant.

Operational Impacts

The BDFP does not involve the construction of residences, and the existing number of employees at the SEP (280) would remain the same with implementation of the project; consequently, the project would not result in a permanent increase in the local population (see Section 4.4, Population and Housing). The project facilities would be constructed in compliance with all applicable fire codes and public safety standards. The operation of the BDFP thus would not result in substantial increases in demand for public services, including law enforcement, fire protection, emergency medical services, schools or libraries. Therefore, operation of the BDFP would not require new or physically altered governmental facilities, and the project would have no impact on public services.

Because project construction would not result in a substantial increase in the local population and project operation would not result in any permanent increase in the local population, the impact of construction and operation of the BDFP on public services would be ***less than significant***.

Mitigation: None required.

Cumulative Impacts

Impact C-PS-1: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative impacts related to public services. (Less than Significant)

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the approach to the cumulative analysis used throughout this EIR and summarizes cumulative projects in the vicinity of the project. The cumulative analysis is based on a list of past, present, and probable future projects.

Operation of the BDFP would not cause or contribute to a potential significant cumulative impact on public services for the reasons discussed in Impact PS-1; consequently, the scope of this analysis is limited to the potential for project construction, in conjunction with other projects, to contribute to a significant cumulative impact related to public services. The project would contribute to a significant cumulative effect if (1) the temporary increase in demand during project construction would make a cumulatively considerable contribution to the public service demands of other past, present, and future projects described in Section 4.1.3 of this EIR that, in combination, would require the construction of new or physically altered governmental facilities (i.e., fire or police stations); *and* (2) the construction of such facilities would have a significant adverse impact on the environment. Based on the construction schedules presented in Table 4.1-1 in Section 4.1, there are 20 cumulative projects near the project site that could be under construction during some portion of the five-year construction period of the BDFP.[19] As discussed in Section 4.13.1, the City has initiated six-year hiring plans for both the SFPD and SFFD. The SFPD hiring plan is expected to reach charter-mandated staffing levels in 2018, and the SFFD hiring plan is expected to restore staffing levels that have been reduced by staff retirements. As noted in Section 4.13.2.3, the SFPD has completed a police district boundary analysis and implemented new district boundaries based, in part, on anticipated growth, and as noted in Section 4.13.1, the SFFD has identified the need for two additional fire stations to serve the southeastern part of San Francisco due to growth in the city.

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[19] Note that among these 20 projects, 13 are proposed by the SFPUC. A Southeast Area Program Construction Manager would be hired by the SFPUC prior to the start of construction of major SEP projects, and would manage implementation of plans and lead coordination efforts between projects and SEP operations throughout construction (see Chapter 2 *Project Description* for complete description). Consistent with the SFPUC's standard construction measures, the SFPUC would prepare Traffic Control Plans for each of these projects requiring (among other things) coordination with emergency responders to maintain emergency access during construction. **Appendix SCM** presents SFPUC's Standard Construction Measures.

Given that recent planning efforts by the SFPD and SFFD anticipate future growth and considering the ongoing efforts by each department to increase staffing levels, the increased need for law enforcement or fire protection services resulting from the proposed project and reasonably foreseeable projects is not expected to exceed levels anticipated by the SFFD or SFPD or require the construction of new or physically altered governmental facilities that are not already planned. Therefore, the BDFP in combination with other projects in the cumulative scenario would have ***less than significant*** cumulative impacts related to public services.

Mitigation: None required.

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4.14 Biological Resources

This section describes existing biological resources near the Southeast Water Pollution Control Plant (Southeast Plant or SEP) and off-site staging areas and evaluates the potential impacts on these resources resulting from implementation of the Biosolids Digester Facilities Project (BDFP or project). Topics analyzed in this section include effects on natural communities of wildlife and plants, special-status species, state or federally listed wildlife, and designated critical habitat. The analysis provides mitigation measures to reduce significant impacts, where appropriate. Refer to Section 4.16, Hydrology and Water Quality, regarding potential adverse effects on water quality, and by extension marine-based biological resources, related to changes in SEP discharge characteristics. The information on natural communities, plant and animal species, and sensitive biological resources used in the preparation of this section was obtained from the following sources:

- The California Natural Diversity Database (CNDDB);[1]
- California Native Plant Society (CNPS) Electronic Inventory;[2]
- The United States Fish and Wildlife Service (USFWS);[3]
- Standard biological literature; and
- Reconnaissance-level site visits (described below).

Biological reconnaissance-level surveys of the project site, off-site staging areas, and vicinity were conducted on July 30 and September 23, 2015, and tree inventories were conducted on July 30, 2015, August 7, 2015, March 7, 2016, and July 19, 2016, in order to characterize existing conditions, assess habitat quality, and assess the potential presence of special-status species and sensitive natural communities.[4]

4.14.1 Setting

4.14.1.1 Regional Setting

The project would be located in the Bay Area-Delta Bioregion,[5] as defined by the State of California's Natural Communities Conservation Program. This bioregion consists of a variety of natural communities that range from the open waters of San Francisco Bay and Delta to salt and brackish

[1] California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB) Summary Table Report for 7.5-minute topographic quadrangles San Francisco North, San Francisco South, Hunters Point, Montara Mountain, Oakland West, San Mateo. Commercial Version, September 16, 2015 and September 28, 2016.

[2] California Native Plant Society (CNPS), Rare Plant Program, Inventory of Rare and Endangered Plants (online edition, v8-02), California Native Plant Society, Sacramento, CA, 2015. Available online at http://www.rareplants.cnps.org. Accessed on September 16, 2015.

[3] United States Fish and Wildlife Service (USFWS), Endangered Species Act Species List for the SFPUC Biosolids Digester Facilities Project, 2015. Available online at http://ecos.fws.gov/ipac/. Accessed on September 16, 2015.

[4] Refer to subsections *Special-Status Species* and *Sensitive Natural Communities* in Section 4.14.1.2 for detailed definitions of these terms.

[5] A bioregion is an area defined by a combination of ecological, geographic, and social criteria and consists of a system of related, interconnected ecosystems. The Bay Area-Delta Bioregion is considered the immediate watershed of the Bay Area and the Delta, not including the major rivers that flow into the Delta. It is bounded on the north by the northern edge of Sonoma and Napa Counties and the Delta, and extends east to the edge of the valley floor; on the south, it is bounded by the southern edge of San Joaquin County, the eastern edge of the Diablo Range, and the southern edge of Santa Clara and San Mateo Counties.

marshes to grassland, chaparral, and oak woodlands. The temperate climate is Mediterranean in nature, with relatively mild, wet winters and warm, dry summers. The high diversity of vegetation and wildlife found in the region is a result of soil, topographic, and microclimate variations that combine to promote relatively high levels of endemism.[6] This, in combination with a long history of uses that have altered the natural environment and the increasingly rapid pace of development in the region, has resulted in a substantial amount of endangerment to some of the local flora and fauna.

The San Francisco Bay-Delta is the second-largest estuary in the United States and supports numerous aquatic habitats and biological communities. It encompasses 479 square miles, including shallow mudflats, tidal marshes, and open waters. The San Francisco Bay-Delta is an important wintering and migratory stopover site on the Pacific Flyway. San Francisco Bay is a critical stopover point along the Pacific Flyway migration route of shorebirds and waterfowl, which number over one billion birds at the height of migration.[7]

4.14.1.2 Local Setting

Section 4.2, Land Use, presents a general description of land uses at the project site and staging areas. With respect to biological resources, the project site and adjacent staging areas (Quint Street, 1550 Evans and Southeast Greenhouses) are fully developed, almost entirely paved, and contain no habitat for sensitive species or rare plants. The limited biological resources largely consist of non-native landscaping, ruderal vegetation, and street trees, with minimal presence of native vegetation. The off-site staging areas (Pier 94/96 and Pier 94 Backlands) are within highly disturbed, partially paved, non-native grassland, and ruderal areas used for parking, stockpiling soil and aggregate, construction staging for other projects, and storage of flatbed trailers, vehicles, and equipment. In general, the off-site staging areas have been built upon fill and provide limited native vegetation that could support sensitive plants or wildlife. Five acres of upland and northern coastal salt marsh habitat have been restored with native vegetation directly north of the Pier 94 staging area[8]; this area, herein referred to as the Pier 94 wetland, provides isolated northern coastal salt marsh habitat for shorebirds such as green winged teal (*Anas carolinensis*) and American avocet (*Recurvirostra americana*).

Project Area Vegetation Communities and Wildlife Habitats

A vegetation community is a recognizable collection of plant species that interact with each other and the elements of their environment and are distinct from adjacent vegetation communities.[9] Wildlife habitat types are based on the dominant plant species within vegetation communities.[10] The

6 Endemism refers to the degree to which organisms or taxa are restricted to a geographical region or locality and thus are individually characterized as endemic to that area.

7 Audubon, The Flyways: Pacific Flyway, 2016. Available online at http://www.audubon.org/pacific-flyway. Accessed on October 3, 2016.

8 Pickett, Mallory, Bay Nature: *Pier 94: By the People, For the Birds*, December 2, 2014. Available online at http://baynature.org/article/pier-94-people-birds/. Accessed on October 3, 2016.

9 Holland, R.F., *Preliminary Descriptions of the Terrestrial Natural Communities of California*, California Department of Fish and Game, Sacramento, CA, 1986.

10 Mayer, Kenneth E. and William F. Laudenslayer, Jr., editors, *A Guide to Wildlife Habitats of California*. State of California Resources Agency, California Department of Fish and Game, Sacramento, CA, 1988.

vegetation/habitat classification presented herein is based on field observations and the California Department of Fish and Wildlife (CDFW) *List of California Terrestrial Natural Communities Recognized by the CNDDB*.[11] Descriptions of the vegetation communities within the project site, staging areas, and immediate vicinity follow.

Developed and Ornamental Landscaping

Landscaped areas supporting a variety of ornamental trees, shrubs, and non-native vegetation are present throughout the project site, nearby staging areas, and the 1550 Evans Avenue staging area. While some of these areas are irrigated, most rely on seasonal precipitation.

Appendix BIO presents the results of tree surveys (e.g., location, tree type, and condition) conducted by a certified arborist at and near the project site and 1550 Evans Avenue on July 30, 2015, August 7, 2015, March 7, 2016, and July 19, 2016.[12]

Landscaped areas can provide cover, foraging, and nesting habitat for a variety or bird species as well as reptiles and small mammals, especially those that are tolerant of disturbance and human presence. Birds commonly found in such areas include non-native species such as English sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*) as well as birds native to the area, including American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), dark-eyed junco (*Junco hyemalis*), western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), and Anna's hummingbird (*Calypte anna*). Reptiles using this type of habitat may include native species such as western fence lizard (*Sceloporus occidentalis*). Other wildlife present in these urban landscaped areas include striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), and roosting bats as well as the non-native Virginia opossum (*Didelphis virginiana*).

Barren/Ruderal Land[13]

Ruderal vegetation occurs in areas that are subject to repeated or otherwise profound disturbance, in addition to opportunistic species that easily colonize disturbed areas. Ruderal vegetation may include some native species, but is typically dominated by non-native and often highly invasive species, including bristly ox-tongue (*Helminthotheca echioides*). Portions of the Piers 94 and 96 staging areas are characterized by this community and have been primarily cleared of vegetation to make room for stockpiled material and debris or Port of San Francisco parking lots or structures. Ruderal areas provide limited foraging or nesting habitat for a few birds and small mammals. Wildlife species occurring in ruderal areas are generally those that tolerate human activity and disturbance. Within the project site and Piers 94 and 96 staging areas, wildlife using adjacent higher quality habitats may forage and occasionally nest within ruderal areas.

[11] CDFW, List of Vegetation Alliances and Associations, Vegetation Classification and Mapping Program, California Department of Fish and Game. Sacramento, CA, September 2010.

[12] A reconnaissance survey of the Piers 94 and 96 staging areas indicated that no trees are present in areas that could be affected by the project; thus, no tree survey was conducted at that location.

[13] "Barren" and "developed" habitats are not natural vegetation communities, as they lack natural vegetation. These terms are used in this analysis to describe land cover types that provide very limited habitat for some wildlife that are adapted to the urban environment.

Annual Grassland

Annual grasslands (identified as coyote brush on **Figure 4.14-1**) exist in patches of the Pier 94 Backlands. Grasslands in these areas are dominated by non-native annual species including wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), Italian ryegrass (*Festuca perennis*), and fennel (*Foeniculum vulgare*). Native plant species, such as California poppy (*Eschscholzia californica*) and coyote brush (*Baccharis pilularis*), can also be found in this community. Grassland habitats can support a variety of wildlife including Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), western harvest mouse (*Reithrodontomys megalotis*), gopher snakes (*Pituophis catenifer catenifer*), and garter snakes (*Thamnophis elegans* spp.), all known to regularly forage or nest in open annual grasslands. Numerous bird species including turkey vulture (*Cathartes aura*), western meadowlark (*Sturnella neglecta*), and savannah sparrow (*Passerculus sandwichensis*) forage or breed in grassland habitats. Additionally, bird species known to frequent nearby saline emergent wetlands, such as snowy egret (*Egretta thula*), western gull (*Larus occidentalis*), American avocet (*Recurvirostra americana*), western sandpiper (*Calidris mauri*), killdeer (*Charadrius vociferous*), willet (*Catoptrophorus semipalmatus*), and Canada geese (*Branta canadensis*), could be found in this habitat on a transitional basis.[14]

Off-Site Wetlands and Other Waters

No potential wetland habitat occurs within 100 feet of the project site or off-site staging areas.[15] The Pier 94 wetland, consisting of restored northern coastal salt marsh, occurs approximately 100 feet north of the Pier 94 staging area (refer to Figure 4.14-1) and is separated from it by a concrete curb. In 2006, the Port of San Francisco and Golden Gate Audubon Society, in cooperation with the USFWS, initiated an extensive local re-introduction of the federally endangered California seablite (*Suaeda californica*) in the Pier 94 wetland and in Heron's Head Park.[16,17] Northern coastal salt marsh provides food and nesting habitat for a wide variety of bird species, such as Ridgway's rail (*Rallus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), and Alameda song sparrow (*Melospiza melodia pusillula*).

A drainage feature (identified as a disturbed drainage on Figure 4.14-1) situated about 100 feet north of the Pier 94 Backlands appears to have been excavated for industrial purposes. Vegetation along the sides of the drainage includes saltgrass (*Distichlis spicata*) and pickleweed (*Salicornia* sp.), both typical of salt marsh vegetation but also occasionally found in non-tidal areas with saturated soil and residual salinity. Ruderal species, including bristly ox-tongue (*Helminthotheca echioides*) and fennel (*Foeniculum vulgare*), also grow along or near the channel. This drainage has been heavily disturbed by activities from adjacent land uses and provides limited habitat for wetland-dependent sensitive plants and wildlife.

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14 City and County of San Francisco, Port of San Francisco. *Wetland Restoration*, 2015. Available online at http://www.sfport.com/index.aspx?page=219. Accessed on September 28, 2015.

15 The ponded water appearing within the Pier 94 staging area on Figure 4.14-1 is not a natural water feature.

16 City and County of San Francisco, Port of San Francisco. *Wetland Restoration*, 2015. Available online at http://www.sfport.com/index.aspx?page=219. Accessed on September 28, 2015.

17 City and County of San Francisco, Port of San Francisco, *Heron's Head Park*, 2015 Available online at http://www.sfport.com/index.aspx?page=210. Accessed on September 28, 2015.

SOURCE: City and County of San Francisco, Port of San Francisco Wetland Restoration, http://www.sfport.com/index.aspx?page=219, accessed September 28, 2015; National Agriculture Imagery Program, Imagery from 2014

SFPUC Biosolids Digester Facilities

Figure 4.14-1

Biological Resources in the Vicinity of Piers 94 and 96

Sensitive Natural Communities

As indicated above, northern coastal salt marsh, identified as a sensitive natural community by the CNDDB, is found in the Pier 94 wetland and south of Pier 96 in Heron's Head Park. Northern coastal salt marsh is formed by salt-tolerant plants forming dense vegetation cover. Plants grow vigorously in the summer and typically go dormant in the winter. Hydric soils[18] are subject to regular tidal inundation for at least part of the year. This vegetation community is found along sheltered inland margins of bays, lagoons, and estuaries, and is distributed extensively throughout the San Francisco Bay Area.

Potentially Jurisdictional Waters within Project Area

Although no formal wetland delineation has been verified by the United States Army Corps of Engineers, no jurisdictional[19] features were observed or are known to occur within the project site or staging areas. Jurisdictional tidal waters are located in San Francisco Bay, more than 100 feet north and east of Piers 94/96. The industrial disturbed linear ditch north of the Pier 94 Backlands displays the presence of saturated soil during some portion of the growing season and/or displays the potential to support a plant species identified with seasonal wetlands, such as pickleweed. No documentation of this industrial ditch has been submitted to regulatory agencies for review or verification of jurisdictional status; however, the linear nature of the feature, and industrial effluent supporting the saturated soil within its boundaries, indicate it was likely constructed for dry land-based industrial purposes to transport stormwater off-site. This ditch has been and will continue to be heavily disturbed by industrial activities in the area.

Wildlife Movement Corridors

Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or areas of human disturbance or urban development. The San Francisco Bay Estuary, which provides important habitat for fish and bird species traveling through the region, is approximately 100 feet from the Piers 94 and 96 staging areas; however, the project site and staging areas do not contain any wildlife corridors.

Special-Status Species

Multiple species known to occur near the San Francisco Bay shoreline are protected pursuant to federal and/or state endangered species laws, or have been designated as species of concern by the USFWS or species of special concern by CDFW. In addition, Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides a definition of rare, endangered, or threatened species that are not included in any listing. Species recognized under these terms area collectively referred to as "special-status species." For purposes of this environmental impact report (EIR), special-status species include:

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[18] Hydric soils are soils that are permanently or seasonally saturated by water, resulting in anaerobic conditions.
[19] As used in this EIR, "jurisdictional" refers to waters or wetlands subject to the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, or CDFW pursuant to the federal Clean Water Act, Porter Cologne Water Quality Act, or California Fish and Game Code.

- Plant and wildlife species listed as rare, threatened, or endangered under the federal or state endangered species acts;
- Species that are candidates for listing under either federal or state law;
- Species currently or formerly designated by the USFWS as a species of concern or by CDFW as a species of special concern;
- Species (such as candidate species) that may be considered rare or endangered pursuant to Section 15380(b) of the CEQA Guidelines;
- Non-listed fish species included in Essential Fish Habitat and of regional importance for harvest; or
- Species on the CDFW Watch List, i.e., species that were previously species of special concern but no longer merit that status or do not meet the CDFW species of special concern criteria but for which there is concern and a need for additional information to clarify status.

A search of CNDDB databases and literature review identified 70 special-status plant species and 60 special-status wildlife species with known occurrences in the six-quadrangle search surrounding the project area. These special-status plants and wildlife were evaluated based on local habitat conditions and the specifics of documented occurrence records to determine the likelihood that suitable habitat was present to support these species. Appendix BIO identifies special-status plant and wildlife species and indicates their potential to occur on the project site or staging areas or to otherwise be affected by project activities. Most of the species investigated have a low potential either to occur or otherwise be affected by the project, and therefore are not discussed in detail below; those with a moderate or higher potential to occur or otherwise be affected are described below. Appendix BIO includes the special-status plant and wildlife species reported to occur in the project area based on information from the following sources: CNDDB,[20] CNPS Electronic Inventory,[21] USFWS,[22] and biological literature of the region.

Special-Status Plants

One special-status plant, California seablite (a federally endangered species) occurs near a project staging area. The Port of San Francisco and Golden Gate Audubon Society, in cooperation with the USFWS, initiated an extensive local re-introduction of California seablite to a reconstructed sand beach ecotone along the salt marsh at Pier 94, approximately 100 feet north of Pier 94 staging area, and Heron's Head Park, south of the Pier 96 staging area.[23,24]

[20] CDFW, California Natural Diversity Database CNDDB Summary Table Report for 7.5-minute topographic quadrangles San Francisco North, San Francisco South, Hunters Point, Montara Mountain, Oakland West, San Mateo. Commercial Version, September 16, 2015, and September 28, 2016.

[21] CNPS, Rare Plant Program, Inventory of Rare and Endangered Plants (online edition, v8-02), California Native Plant Society, Sacramento, CA, 2015. Available online at http://www.rareplants.cnps.org. Accessed on September 16, 2015.

[22] USFWS, Endangered Species Act Species List for the SFPUC Biosolids Digester Facilities Project, 2015. Available online at http://ecos.fws.gov/ipac/. Accessed on September 16, 2015.

[23] City and County of San Francisco, Port of San Francisco, *Wetland Restoration*, 2015. Available online at http://www.sfport.com/index.aspx?page=219. Accessed on September 28, 2015.

[24] City and County of San Francisco, Port of San Francisco, *Heron's Head Park*, 2015. Available online at http://www.sfport.com/index.aspx?page=210. Accessed on September 28, 2015.

Special-Status Wildlife

The following special-status wildlife species have a moderate or higher potential to occur and could be affected by the project:

- **Saltmarsh common yellowthroat** (*Geothlypis trichas sinuosa*). Saltmarsh common yellowthroat, a state species of special concern, inhabits brackish and saline tidal marsh around San Francisco Bay associated with a high coverage of bulrush (*Schoenoplectus* spp.), broadleaved pepperweed (*Lepidium latifolium*), and rush (*Juncus* sp.). Saltmarsh common yellowthroat occurred historically on the San Francisco Peninsula, particularly near water features on the west side of the city. The nearest CNDDB record of the species is over five miles from the project site.[25] Stands of perennial pepperweed north of the Pier 94 staging area could provide suitable foraging habitat for saltmarsh common yellowthroat.

- **Double-crested cormorant** (*Phalacrocorax auritus*). The double-crested cormorant is a former state species of special concern and its nesting colonies are still considered a resource of conservation concern by CDFW. A yearlong resident along the entire coast of California, the species is fairly common along the coast and in estuaries and salt ponds. The species forages mainly on fish, crustaceans, and amphibians. It sometimes feeds cooperatively in flocks of up to 600, often with pelicans, and nests in colonies of a few to hundreds of pairs.[26] Double-crested cormorants have adapted to nesting on power transmission towers, bridges, and sometimes trees. There are breeding colonies on Yerba Buena Island (approximately five miles north of the project site) and near Lake Merced (over five miles from the project site).[27] Although no documented nesting sites occur on the project site or off-site staging areas, the species could forage in the Bay waters or roost within cargo crane facilities on the eastern edge of Pier 96.

- **Snowy egret** (*Egretta thula*). Snowy egret feed on small fish, crustaceans, and large insects in shallow water and along shores of wetlands and aquatic habitats. San Francisco Bay colonies nest at ground level on gumweed (*Grindelia humilis*), pickleweed, and most commonly on coyote brush; the nearest snowy egret nesting colony to the BDFP is on Brooks Island, over 10 miles northeast of the project site/staging areas. Coyote brush in the Pier 94 Backlands could provide low-quality nesting habitat for this species. Snowy egret nesting colonies are named resources on the California Special Animals List.[28]

- **Special-status bat species.** Townsend's big-eared bat (*Corynorhinus townsendii*) has the potential to occur in the vicinity of the project site and off-site staging areas. This species is currently a state species of special concern and is under review for being removed as a state "threatened" candidate. This analysis considers the Townsend's big-eared bat a protected species. The nearest local CNDDB occurrence for Townsend's big-eared bat is Twin Peaks, approximately three miles west of the project site.[29] Preferred roosting habitats for Townsend's big-eared bat include open indoor areas where roosts can hang from walls and ceilings, protected from human

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[25] CDFW, CNDDB Summary Table Report for 7.5-minute topographic quadrangles San Francisco North, San Francisco South, Hunters Point, Montara Mountain, Oakland West, San Mateo. Commercial Version, September 16, 2015, and September 28, 2016.

[26] Zeiner et al., California's Wildlife Volume III: Mammals, 1990. Editors Zeiner, D., Laudenslayer, Jr., W., Mayer, K., White, M. CDFW. April 1990.

[28] "Special Animals" is a broad term used to refer to all the animal taxa tracked by CDFW's CNDDB, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special-status species."

[29] CDFW, CNDDB Summary Table Report for 7.5-minute topographic quadrangles San Francisco North, San Francisco South, Hunters Point, Montara Mountain, Oakland West, San Mateo. Commercial Version, September 16, 2015, and September 28, 2016.

disturbance.[30] Nursery colonies begin in the late summer and can last until early fall. Although unlikely, bats could roost in the inactive areas on or near the project site and off-site staging areas, due to the presence of underutilized buildings.

Designated Critical Habitat

The USFWS and National Marine Fisheries Service (NMFS) designate critical habitat with the purpose of contributing to the conservation of federally listed threatened and endangered species and the habitats upon which they depend. The designation of an area as critical habitat provides additional protection to habitat only when there is a federal nexus with regard to some aspect of the project—for example, when a federal agency is implementing or issuing a permit for a project. Critical habitat protection is only relevant when other statutory or regulatory protections, policies, or other factors relevant to agency decision-making would not prevent the destruction or adverse modification of habitat. Designation of critical habitat triggers the prohibition of destruction or adverse modification of that habitat. The Bay waters are considered critical habitat for Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon (*O. tshawytscha*), Central Valley fall-run/late fall-run Chinook salmon (*O. tshawytscha*), Central California coast Coho salmon (*O. kisutch*), Central Valley steelhead trout (*O. mykiss*), Central California coast steelhead trout (*O. mykiss*), and green sturgeon (*Acipenser medirostris*). There is no designated upland critical habitat near (within two miles of) the project site or off-site staging areas.

4.14.2 Regulatory Framework

4.14.2.1 Federal Regulations

Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects the fish and wildlife species and their habitats that the USFWS or NMFS has identified as threatened or endangered. The term "endangered" refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range. The term "threatened" refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

The USFWS and NMFS administer the FESA. In general, the NMFS is responsible for protecting FESA-listed marine species and anadromous fishes (those that live in the sea but migrate upstream to spawn), whereas listed, proposed, and candidate wildlife, plant species, and fish species are under USFWS jurisdiction. "Take"[31] of listed species can be authorized through either the Section 7[32] consultation

[30] Pierson, E. and Rainey, W., Distribution, Status, and Management of Townsend's Big-Eared Bat (Corynorhinus townsendii) in California. Wildland Resources Center, prepared for the Department of Fish and Game, May 1998.

[31] The FESA defines the term "take" as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

[32] Under Section 7, the federal lead agency must consult with the USFWS to ensure that the proposed action would not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. The USFWS then issues a biological opinion determining that (1) the proposed action may either jeopardize the continued existence of one or more listed species or result in the destruction or adverse modification of critical habitat, or (2) the proposed action would not jeopardize the continued existence of any listed species or result in adverse modification of critical habitat.

process (for actions by federal agencies, such as the U.S. Army Corps of Engineers) or the Section 10 permit process (for actions by non-federal agencies). Federal agency actions include activities on federal land or that are conducted by, funded by, or authorized by a federal agency (including issuance of federal permits and licenses).

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (16 United States Code [USC], Section 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs. Marine birds that are covered by provisions of the Migratory Bird Treaty Act with the potential to be present in the project area include the double-crested cormorant and western gull, among others.

4.14.2.2 State Regulations

California Endangered Species Act

Under the California Endangered Species Act (CESA), CDFW maintains lists of threatened and endangered species (California Fish and Game Code Section 2070). CDFW also maintains a list of "candidate species," species that CDFW has formally recognized as being under review for addition to either the list of endangered species or the list of threatened species. CDFW also maintains lists of "Species of Special Concern," which are certain designated species with declining population levels, limited ranges, and/or continuing threats that have made them vulnerable to extinction. Pursuant to the requirements of the CESA, an agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any project that may affect a candidate species.

California Fish and Game Code Sections 3503, 3511, 4150, 4700, and 5050

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.3 of the California Fish and Game Code prohibits take, possession, or destruction of any raptor (birds of prey) in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Any loss of fertile eggs or nesting raptors, or any activities resulting in nest abandonment, would constitute a take.

California Fish and Game Code Section 4150 states that all non-game mammals or parts thereof may not be taken or possessed except as otherwise provided in the code or in accordance with regulations adopted by the California Fish and Game Commission. This section applies to all bat species.

CDFW Fully Protected Species may not be taken or possessed at any time without a permit from CDFW (Section 3511 Birds, Section 4700 Mammals, and Section 5050 Reptiles and Amphibians).

Refer also to Section 4.16.2.2 in Section 4.16, Hydrology and Water Quality, for a description of the National Pollutant Discharge Elimination System (NPDES) Waste Discharge Regulations. NPDES requirements (implemented in California at the state level) are designed to protect water quality in receiving waters, including water quality for beneficial uses associated with protection of habitats and biological resources.

4.14.2.3 Local Regulations

San Francisco General Plan

The Environmental Protection Element of the *San Francisco General Plan* contains the following objectives and policies related to biological resources protection that are relevant to the project:

- **General**

  ***Objective 1*:** Achieve a proper balance among the conservation, utilization, and development of San Francisco's natural resources.

  > *Policy 1.1*: Conserve and protect the natural resources of San Francisco.
  >
  > *Policy 1.2*: Improve the quality of natural resources.
  >
  > *Policy 1.3*: Restore and replenish the supply of natural resources.
  >
  > *Policy 1.4*: Assure that all new development meets strict environmental quality standards and recognizes human needs.

- **Bay, Ocean, and Shorelines**

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

  > *Policy 3.1*: Cooperate with and otherwise support regulatory programs of existing regional, State, and Federal agencies dealing with the Bay.
  >
  > *Policy 3.2*: Promote the use and development of shoreline areas consistent with the General Plan and the best interest of San Francisco.

- **Flora and Fauna**

  ***Objective 8*:** Ensure the protection of plant and animal life in the City.

  > *Policy 8.1*: Cooperate with and otherwise support the California Department of Fish and Game [CDFW] and its animal protection programs.
  >
  > *Policy 8.2*: Protect the habitats of known plant and animal species that require a relatively natural environment.
  >
  > *Policy 8.3*: Protect rare and endangered species.

San Francisco Public Works Code Article 16

The San Francisco Urban Forestry Ordinance (Article 16 of the San Francisco Public Works Code) was enacted to protect several categories of trees: street trees, significant trees, and landmark trees (collectively referred to herein as "protected trees") in areas under San Francisco Public Works jurisdiction and trees located on City and County of San Francisco (City)-owned property. The three categories of trees protected by the ordinance are defined as follows:

- **Street trees** are "any tree growing within the public right-of-way, including unimproved public streets and sidewalks, and any tree growing on land under the jurisdiction of the Department [of Public Works]" as defined in Section 802 of the ordinance. The removal of street trees by persons other than the Department of Public Works is restricted by Section 806(b). There are street trees within the proposed staging area along Jerrold Avenue, and along Phelps Street adjacent to the Southeast Greenhouses site.

- **Significant trees** are defined in Section 810A of the ordinance as (1) trees on property under the jurisdiction of the Department of Public Works or on privately owned property with any portion of its trunk within 10 feet of the public right-of-way, and (2) trees that satisfy at least one of the following criteria: (a) a diameter at breast height in excess of 12 inches, (b) a height in excess of 20 feet, or (c) a canopy in excess of 15 feet. Section 806(b) contains restrictions regarding the removal of significant trees by persons other than the Department of Public Works. Some trees near the project site and off-site staging areas meet the criteria for significant trees.

- **Landmark trees** are trees that have been designated as such by ordinance approved by the Board of Supervisors based on a nomination and recommendation process.[33] There are no designated landmark trees in the project area.

Section 808 of the article pertains to protection of such trees and states the following:

- **Injury to or Destruction of Trees Prohibited.** It shall be unlawful for any person to … injure or destroy a street tree, any tree on City property, a significant tree, or a landmark tree. Removal of a tree under City order or removal in accordance with a [tree removal] permit is exempt from this prohibition.

- **Injury to or Destruction of Landscape Materials Prohibited.** It shall be unlawful for any person to … injure or destroy any landscape material in any street median, center strip, or other landscaped portion of a public right-of-way under the City's jurisdiction, except as authorized by the Department [of Public Works].

- **Construction Work: Protection of Trees Required.** It shall be unlawful for any person to engage in any construction work on private or public property without first taking steps to protect street trees, significant trees, and landmark trees from damage, including damage caused by soil compaction or contamination, excavation, or placement of concrete or other pavement or foundation material. If excavation, construction, or street work is planned within the dripline of a significant tree, a landmark tree or a tree on any street or other publicly owned property said tree(s) shall be adequately protected.

Appendix BIO indicates street trees and significant trees identified during the tree survey conducted for the BDFP (no landmark trees were identified). The proposed tree removal and landscaping as well as the tree protection plan described in Chapter 2, *Project Description*, are designed to conform with the requirements of San Francisco Public Works Code Article 16 with respect to replacement of trees removed during construction and, for trees to be retained, tree protection measures.

33 Trees that have been nominated and are undergoing review are protected according to the same standards as designated landmark trees while going through the review process, according to Section 810 of the ordinance.

San Francisco Public Works Code Article 4.2

Discharges of construction-related stormwater runoff in San Francisco are subject to the construction site runoff requirements of Article 4.2 of the San Francisco Public Works Code, Section 146. In accordance with these requirements, any project that disturbs more than 5,000 square feet of land is subject to a Construction Site Runoff Control Permit. Covered land-disturbing activities include building demolition, clearing, grading, grubbing, filling, stockpiling, excavating, and transporting soil. The permit specifically requires easements for drainage facilities, provision of adequate dust controls in conformance with applicable air pollution laws and regulations, and improvement of any existing grading, ground surface, or site drainage to meet the requirements of Article 4.2. The application for the permit must also include an Erosion and Sediment Control Plan. Refer to Section 4.16.2.3 in Section 4.16, Hydrology and Water Quality, for more information on San Francisco Public Works Code Article 4.2.

San Francisco Standards for Bird-Safe Buildings

The San Francisco Planning Department adopted *Standards for Bird-Safe Buildings* in 2011, adding San Francisco Planning Code Section 139. The standards impose requirements for certain new construction and additions in order to reduce bird mortality from collisions with buildings. The requirements apply to two types of bird hazards. "Location-related hazards" are buildings located inside of, or within a clear flight path of less than 300 feet from, an Urban Bird Refuge.[34] Requirements for location-related hazards include bird-safe glazing treatments, lighting controls, and wind generator controls. The location-related standards do not apply because the project would not be located in or near an Urban Bird Refuge. "Feature-related hazards" include free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size. Structures that include these elements must treat 100 percent of the glazing on feature-specific hazards. The feature-related standards do not apply to the project because the BDFP would not contain any feature-related hazards.

San Francisco Public Utilities Commission Standard Construction Measure 7

The San Francisco Public Utilities Commission (SFPUC) would implement standard construction measures for the BDFP (described in **Appendix SCM**), including the following measure applicable to biological resources:

- All project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. A qualified biologist will also carry out a survey of the project site, as appropriate, to note the general resources and identify whether habitat for special-status species and/or migratory birds are present. In the event further investigation is necessary, the SFPUC will comply with all local, State, and federal requirements for surveys, analysis, and protection of biological resources (e.g., Migratory Bird Treaty Act, federal and State Endangered Species Acts, etc.). If necessary, measures will be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work

[34] An Urban Bird Refuge is defined in the *Standards for Bird-Safe Buildings* as any area of open space two acres or larger that is dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, water features, or wetlands; open water; and some green rooftops.

buffer zones, installing bird deterrents, monitoring by a qualified biologist, and other such measures. If tree removal is required, the SFPUC would comply with any applicable tree protection ordinance.

4.14.3 Impacts and Mitigation Measures

4.14.3.1 Significance Criteria

The project would have a significant impact related to biological resources if the project were to:

- 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 Wildlife or U.S. Fish and Wildlife Service;
- 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 Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Due to the nature of the proposed project, there would be no impact related to the following topics for the reasons described below:

- ***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 Wildlife or U.S. Fish and Wildlife Service.*** Project-related activities at the Pier 94 staging area would not affect the restored northern coastal salt marsh (Pier 94 wetlands), approximately 100 feet to the north, since all activities would be restricted to the staging area and separated from the Pier 94 wetlands by a curb along the northern perimeter. Additionally, implementation of best management practices, including sediment and water barriers, would be employed to prevent any construction-related material from leaving the staging area and entering the marsh. Refer to Section 4.16, Hydrology and Water Quality, for more information regarding best management practices implementation. For these reasons, this significance criterion is not discussed further in this EIR.
- ***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.*** As discussed above, the project site and off-site staging areas

are within the urbanized Bayview-Hunters Point community and do not contain any wildlife corridors; therefore, this significance criterion is not discussed further in this EIR.

- ***Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*** Neither the project site nor the off-site staging areas are within areas covered by either a habitat conservation plan or a Natural Community Conservation Plan. The project would be constructed and would operate within an active industrial area, and would occupy Port of San Francisco property only temporarily. Therefore, this significance criterion is not discussed further in this EIR.

4.14.3.2 Approach to Analysis

Construction Impacts

The analysis discusses special-status plants and wildlife that could occur on or in the vicinity of the project site and off-site staging areas and identifies the potential temporary impacts, such as those that could affect species or their habitat only during the construction period, and permanent impacts, including substantial alteration or loss of habitat, on these species as a result of construction. The analysis was based on the results of the CNDDB database search and technical reports, and describes applicable regulations and project construction activities and operations. In many cases, laws and regulations require actions that would reduce the adverse effects of the project construction on biological resources.

Operational Impacts

Upon completion of the project, all operations would be restricted to the expanded, modernized SEP, and no activities would occur within the staging areas. The project would replace and relocate the solids treatment facilities at the SEP, and long term operation of the BDFP would replace the existing solids handling operations. Due to limited biological resources found within and near the project site, continuation of ongoing solids handling operations at these new SEP facilities would not significantly affect biological resources over the long term. Project operations would modify the secondary-treated effluent discharged from the SEP to San Francisco Bay during dry weather, Impact HY-5 in Section 4.16, Hydrology and Water Quality, addresses potential effects on receiving waters from changes in discharge characteristics. For these reasons, operational impacts on biological resources are not discussed in the impact analysis below.

Cumulative Impacts

The analysis of cumulative biological resources impacts uses a list-based approach to analyze the effects of project construction in combination with other past, present, and probable future projects in the immediate vicinity of the BDFP. Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis and summarizes reasonably foreseeable future projects in the vicinity of the BDFP that could contribute to a cumulative construction impact. Refer to Table 4.1-1 and Figure 4.1-1 for descriptions and locations of potential cumulative projects in the vicinity of the BDFP. Construction and operations of other projects in the geographical area considered in the cumulative analysis would have to comply with the same regulatory requirements as the project, and these requirements would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. The analysis then considers whether there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.14.3.3 Impact Evaluation

Construction Impacts

Impact BI-1: Project construction could have a substantial adverse effect, either directly or through habitat modifications, on 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 Wildlife or United States Fish and Wildlife Service. (Less than Significant with Mitigation)

Special-Status Bats

The project could directly affect Townsend's big-eared bat during construction activities. Bats and other non-game mammals are protected in California under the state Fish and Game Code (described above in Section 4.14.2). Under the Fish and Game Code, the following activities are prohibited and would be considered a significant impact: (1) destruction of an occupied, non-breeding bat roost, resulting in the death of bats; (2) disturbance that causes the loss of a maternity colony of bats (resulting in the death of young); or (3) destruction of hibernacula[35] (although hibernacula are generally not formed by bat species in the Bay Area due to sufficiently high temperatures year-round). Maternity roosts are those that are occupied by pregnant females or females with non-flying young. Non-breeding roosts are day roosts without pregnant females or non-flying young.

Disturbance could result from building demolition (including demolition of the Central Shops structures and the buildings at 1550 Evans Avenue) or tree removal if roosts are located in those building or trees. Construction-associated noise or vibration or increased human activity in the area could also disturb bat roosts. Increased noise, vibration, or lights or the reconfiguration of large objects can also lead to the disturbance of roosting bats, which may lead to behavioral alterations. Human disturbance can also lead to a change in humidity, temperature, or the approach to a roost that could force the bats to change their mode of egress and/or ingress to a roost. Although temporary, such disturbance can lead to the abandonment of a maternity roost, which in most cases would be considered a significant impact.[36]

35 Hibernaculum refers to the winter quarters of a hibernating animal.
36 H.T. Harvey & Associates, California Bat Mitigation Techniques, Solutions, and Effectiveness, 2004. Prepared by H.T. Harvey & Associates, with Tatarian, G. and Pierson, E., for California Department of Transportation (Caltrans) and California State University Sacramento Foundation. December 29, 2004.

The nearest confirmed occurrence of Townsend's big-eared bat is approximately three miles away. Although there is an existing high level of disturbance in the project area and SEP operations generate ongoing operational noise, suitable roosting habitat could be present in inactive buildings and other structures; therefore, structure demolition and related construction activities could directly destroy bat roosts or disturb maternity colonies, a potentially significant impact. **Mitigation Measure M-BI-1 (Protective Measures for Special Status Bats and Maternity Roosts)** would reduce this impact by protecting bats during construction. The implementation of Mitigation Measure M-BI-1 would reduce impacts on roosting bats to a less-than-significant level.

Nesting Birds

Migratory birds could forage and/or nest on the ground or in vegetation found at the restored northern coastal salt marsh north of the Pier 94 staging area, at the project site, at the Pier 94 Backlands, and on manmade structures on the eastern border of Pier 96. As discussed in Section 4.14.1.2, the following special status birds could nest or forage near the Piers 94 and 96 staging areas: common yellowthroats, double-crested cormorant, and snowy egret. Construction of the BDFP would result in noise and visual disturbances, would include vegetation removal, and would generate stormwater runoff affected by construction activities. These activities could adversely affect nesting bird species within 0.25 mile of the project site and off-site staging areas during the nesting season (February 1 – August 31).

Although ground-nesting species may be present near the off-site staging areas, the presence of concrete curbs separating the Piers 94 and 96 staging areas from sensitive wildlife habitats would provide a suitable barrier to prevent any construction-related material from indirectly affecting these habitats. Additionally, protection of ground nesting birds would be provided by the City's Construction Site Runoff Ordinance, the requirements of which are in Article 4.2 of the San Francisco Public Works Code, Section 146. These requirements would control the discharge of pollutants to the local storm drain system or to San Francisco Bay, and thus would reduce impacts on sensitive wildlife habitats outside the Piers 94 and 96 staging areas (e.g., in Bay water and restored Pier 94 salt marsh) through implementation of best management practices contained in a Stormwater Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan. As described in Section 4.16, Hydrology and Water Quality, either of these plans is required in order to comply with the Construction Site Runoff Control Permit. Compliance with the Construction General Stormwater Permit would ensure that the effects of construction site runoff on adjacent ground nesting bird habitat would be less than significant.

Although high ambient noise levels exist at the SEP and Port of San Francisco facilities, noise and visual disturbance from project construction activities could still affect nesting efforts at and around the project site and off-site staging areas. Construction activities that may alter the ambient noise environment or introduce short-term loud noise events include but are not limited to building demolition, grading, and the use of heavy machinery. Noise pollution can be detrimental to wildlife, and bird populations are particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors. A single stimulus event could have an effect on bird behavior, and studies suggest that short-term loud noises can affect foraging and roosting birds by temporarily disturbing these behaviors, and may deter bird use of an area (including nesting) if such noises persist over the long term.[37]

As described in more detail below in Impact BI-3, BDFP construction activities would result in removal of and damage to trees, some of which provide nesting bird habitat; vegetation at the Pier 94 backlands (including coyote brush) could also be removed. Removal of trees, vegetation at the Pier 94 backlands, and structures (refer to Figure 2-17 in Chapter 2, *Project Description*) during the nesting season (conservatively interpreted by CDFW as between February 1 and August 31) could disturb nesting birds if present.

However, as described in Section 4.14.2.3, above, the SFPUC would implement Standard Construction Measure (SCM) 7 during construction, which would reduce the potential impacts to nesting birds caused by project noise, visual disturbance, and vegetation and structure removal. SCM 7 would be incorporated into the project construction specifications and would require that a qualified biologist survey the project site and staging areas to identify the presence of special-status species and/or nesting birds. The biologist would identify specific measures needed to protect biological resources (to comply with the Migratory Bird Treaty Act), and the SFPUC, through its contractors, would be required to implement those site-specific measures (such as establishing work buffer zones, installing bird deterrents, and conducting biological monitoring as needed during construction) to ensure compliance with the Migratory Bird Treaty Act. With the implementation of site-specific biological resources protection measures as identified as part of SCM 7 ensuring compliance with the Migratory Bird Treaty Act, the project's impacts on nesting birds would be less than significant.

Special-Status Plants

As discussed in Section 4.14.1.2, known populations of California seablite, a federally endangered species, occur over 100 feet north of Pier 94. Due to the distance and the physical barriers between the Pier 94 off-site staging area and the seablite population, as well as the historic industrial operations and existing human disturbance on the project site and other off-site staging areas, no special-status plants would be affected by project construction.

Summary of Impact BI-1

Implementation of SFPUC Standard Construction Measures, which requires compliance with state and federal regulations, would avoid or reduce adverse effects on nesting birds, and project impacts on nesting birds would be therefore be less than significant. However, the removal of underutilized buildings, trees, and other structures that could serve as bat roosting sites could adversely affect bat species at the project site and construction staging areas, and would be a potentially significant impact. Implementation of Mitigation Measure M-BI-1, Protective Measures for Special Status Bats and Maternity Roosts, would protect bats during construction and reduce the impact to less than significant. This impact would be ***less than significant with mitigation***.

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[37] Ellis, D.H., C.H. Ellis, and D.P. Mindell, Raptor Responses to Low-Level Jet Aircraft and Sonic Booms, Environmental Pollution 74:53-83, 1981.

Mitigation Measure M-BI-1: Protective Measures for Special Status Bats and Maternity Roosts

The San Francisco Public Utilities Commission (SFPUC) shall engage a qualified biologist to conduct a pre-construction survey of buildings and other structures to be demolished, vacant buildings within 100 feet of construction activities, trees to be removed, and trees located within 100 feet of construction activities to locate potential roosting habitat for special-status bats and active maternal colonies. The pre-construction surveys shall occur no more than two weeks in advance of initiation of building demolition or renovation activities on-site or initiation of construction. No activities that could disturb active roosts of special-status bats or maternal roosts shall proceed prior to the completed surveys. The pre-construction survey shall include at a minimum:

- Identification of potential direct and indirect project-related bat- disturbing activities; and
- Locations of active roosting habitat and maternal colonies.

If the pre-construction survey does not identify signs of potentially active bat roosts (e.g., guano, urine staining, dead bats, etc.) then no further action is required. If the pre-construction survey identifies signs of potentially active bat roosts, the following measures shall be implemented:

- Removal of structures and trees shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 to August 31); and outside of months of winter torpor (approximately October 15 to February 28). On structures where bats were observed during the pre-construction survey, exclusion devices (i.e., one-way doors) shall be installed prior to removal of the structures. Exclusion devices shall be left in place for a minimum of four nights prior to demolition of the structures.

- If removal of structures and trees during the periods when bats are active is not feasible and active bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the project site where structure demolition or renovation is planned, a no-disturbance buffer of 100 feet or less if determined adequate by a qualified biologist in coordination with the California Department of Fish and Wildlife (CDFW) based on site-specific conditions shall be established around the roost sites until they are determined to be no longer active or volant by a qualified biologist.

- The qualified biologist shall be present during structure and tree disturbance if active bat roosts are present. Structures and trees with active roosts shall be removed only when no rain is occurring or is forecast to occur for three days and when daytime temperatures are at least 50 degrees Fahrenheit (˚F).

- Structures or trees containing or suspected to contain active bat roosts shall be dismantled or removed under the supervision of the qualified biologist in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost.

- If significant bat roosting habitat (e.g., maternity roosts or special-status non-maternity roost sites) is destroyed during structure or tree removal, artificial bat roosts shall be constructed in an undisturbed area in the project site vicinity away from human activity and at least 200 feet from project demolition/construction activities. The design and location of the artificial bat roost(s) shall be determined by a qualified bat biologist.

- Bat roosts that begin during construction are presumed to be unaffected, and no buffer would be necessary.

Impact BI-2: Project construction would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means. (Less than Significant)

As described in Section 4.14.1.2, there are no known jurisdictional features within the project site or construction staging areas. The Pier 94 wetlands area is located approximately 100 feet north of the Pier 94 staging area and is isolated from proposed staging area activities, separated by a concrete curb. Due to the existing physical barriers and distance, the Pier 94 wetland would not be affected by the project.

Although jurisdictional status is not formalized, the ditch north of the Pier 94 Backlands displays non-jurisdictional attributes. Ephemeral effluent from the adjacent rendering plant industrial operations results in incidental aquatic characteristics in this ditch. Even if this feature has state or federal status, activities proposed by the project would not directly or indirectly affect this feature, as grading and excavation for new utilities for the staging areas at these piers would be subject to both Article 4.2 of the San Francisco Public Works Code (Section 146) and the State Water Resources Control Board's Construction General Stormwater Permit. Article 4.2 requires implementation of an Erosion and Sediment Control Plan for projects that disturb more than 5,000 square feet of land, and the Construction General Stormwater Permit requires implementation of a SWPPP for projects that disturb one or more acres of land (refer to Section 4.16, Hydrology and Water Quality, for additional discussion of these requirements). Article 4.2 provides that projects subject to both regulatory requirements may prepare a SWPPP in lieu of the Erosion and Sediment Control Plan. Implementation of the best management practices contained in either of these plans, such as silt fence and fiber wattles, in all areas of the project site and off-site staging areas would prevent sediment-laden runoff from exiting these areas. These measures would be required through the project's adherence with Article 4.2, the project's SWPPP, and regulatory agency approval requirements.

For these reasons, the project's effect on federally protected wetlands would be ***less than significant***.

Mitigation: None required.

Impact BI-3: Construction activities would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant)

Appendix BIO presents the results of the tree surveys conducted at and near the project site and the 1550 Evans Avenue staging area. Jerrold Avenue, the 1550 Evans Avenue staging area, and other areas in and around the project site contain trees that are either proposed for removal or could be adversely affected by the project. Figures 1, 2, and 3 in Appendix BIO identify the trees surveyed for this analysis. The areas surveyed include those areas that could be directly affected by project construction as well as areas that could be affected if construction staging were to occur in these areas. The tree surveys documented 172 trees, 42 of which are street trees or significant trees under Article 16 of the San Francisco Public Works Code. No landmark trees were identified during the surveys. Appendix BIO also indicates the approximately 90 trees that would be removed during construction, seven of which are significant trees. (No street trees are proposed for removal.) Absent more specific information regarding staging locations within the SEP, this analysis conservatively assumes that any of the trees surveyed within those areas could be removed or damaged.

As indicated in Chapter 2, *Project Description*, Sections 2.4.2.3, Architecture and Landscaping, and 2.6.5.5, Tree Removal and Tree Protection Plan, the SFPUC proposes to plant trees and other landscaping to replace trees to be removed along Jerrold Avenue (refer to Figure 2-11 in Chapter 2) as part of the project. Remaining trees on or adjacent to the project site and off-site staging areas that would not be removed could nevertheless be damaged by project construction activities unless proper precautions are implemented; such damage could include mechanical damage to tree trunks and canopies, root damage resulting from grading and excavation activities, and root damage resulting from soil compaction. Under the BDFP, these trees would be protected through implementation of requirements of Article 16 of the San Francisco Public Works Code, including a Tree Protection Plan, as described in Section 2.6.5.5 of Chapter 2, which would be submitted to San Francisco Public Works prior to construction. The Tree Protection Plan would be prepared by a certified arborist and would document procedures for protecting trees, including but not limited to identification of tree protection zones, tree protection fencing at the dripline of the tree or as directed by a certified arborist to preclude work in this area including any staging of heavy equipment or materials, and monitoring requirements. The project's commitment to tree replacement and protection would conform to Article 16 of the San Francisco Public Works Code. For these reasons, the impact would be ***less than significant.***

Mitigation: None required.

Cumulative Impacts

Impact C-BI-1: The project, in combination with past, present, and probable future projects, could substantially contribute to cumulative impacts on biological resources. (Less than Significant with Mitigation)

The geographic scope for potential cumulative impacts on biological resources encompasses the species occurrences, habitats, and sensitive natural communities in the vicinity of the project site and off-site staging areas (refer to Figure 4.1-1 in Section 4.1). Projects from Table 4.1-1 that are within the geographic scope would affect biological resources similar to those of the project if they were to:

- Demolish or remove buildings or structures that could be used as bat roosts;
- Remove trees or other nesting substrate or generate substantial noise (resulting in adverse effects on nesting birds); or
- Have a substantial adverse effect on federally protected wetlands.

Bats

Regarding bats, numerous projects identified in Table 4.1-1 would include demolition and/or tree removal and could generate substantial noise during construction. Examples include the Southeast Plant Headworks Replacement Project, Central Shops Relocation and Land Reuse, Southeast Greenhouses Demolition, and San Francisco Gateway. Demolition of BDFP structures along with building demolition associated with other cumulative projects could have a substantial adverse effect on roosting bats, a potentially significant cumulative impact. Implementation of Mitigation Measure M-BI-1 (Protective Measures for Special-status Bats and Maternity Roosts) would reduce the BDFP's impacts on roosting bats by preferentially removing structures when bats are active, establishing no-disturbance buffers around roost sites, constructing artificial roosts, and removing structures containing active bat roosts under the oversight of a qualified biologist and in a manner that encourages the bats to abandon the roost. After mitigation, the BDFP's remaining contribution to this cumulative impact would be less than cumulatively considerable, and the cumulative impact would be ***less than significant with mitigation***.

Nesting Birds

Regarding disturbance of nesting birds, like the BDFP, most of the projects identified in Table 4.1-1 would generate noise during construction and several of the projects (e.g., Southeast Greenhouses Demolition) would require tree and vegetation removal, resulting in a potentially significant cumulative impact on nesting birds. For all cumulative projects implemented by the SFPUC at and near the SEP, the SFPUC would implement SCM 7 (described in Section 4.14.2.3, and Impact BI-1, above) pertaining to biological resources that includes steps to ensure compliance with the Migratory Bird Treaty Act, including appropriate monitoring and protection of nesting birds.

In the vicinity of Piers 94 and 96, the proposed Asphalt and Concrete Recycling and Production Plant at Pier 94 and the Pier 96 Bulk Export Terminal projects could also generate noise during construction and operation. The Pier 90-94 Backlands Improvements Project would remove vegetation at the Pier 94 Backlands. While the BDFP project-level analysis above assumed that vegetation would be present at the Pier 94, if the Pier 90-94 Backlands Project is implemented prior to

BDFP, coyote brush would no longer be present at the Pier 94 Backlands when the BDFP is constructed. Either way, the impact would not be additive. In addition, as described above in Impact BI-1, the BDFP's potential impacts on ground nesting birds in these areas would be less than significant because of the concrete curbs separating the BDFP staging areas from these sensitive wildlife habitats and because of the stormwater runoff controls that would be implemented. Therefore, for these reasons and with implementation of SCM 7, the BDFP's contribution to this cumulative impact on ground nesting birds would be less than significant (i.e., not cumulatively considerable). Overall, with implementation of SCM 7 and compliance with state and federal regulations for protection of nesting birds, the BDFP's contribution to potential cumulative impacts on nesting birds would be less than cumulatively considerable, and the cumulative impact would be less than significant.

Wetlands

With respect to potential cumulative impacts on wetlands, as discussed in Impact BI-2, the jurisdictional status of the industrial ditch north of Pier 94 Backlands is not formalized. Projects such as the Pier 90-94 Backlands Improvements Project, the Asphalt and Concrete Recycling and Production Plant at Pier 94, and the Candlestick Point-Hunters Point Shipyard Phase I and II Development Project could also affect drainage to potential wetlands along San Francisco Bay. All cumulative development in San Francisco would be subject to the same regulatory framework as would the project for the control of construction stormwater runoff; for this reason, wetland impacts associated with the BDFP, when combined with those of these cumulative projects, would be less than significant with the implementation of the City's Construction Site Runoff Ordinance, the project's SWPPP, and regulatory agency approval requirements.

Summary of Impact C-BI-1

With implementation of SCM 7 and compliance with construction stormwater runoff regulatory requirements, the BDFP's contribution to potential cumulative impacts on nesting birds and wetlands would not be cumulatively considerable and therefore less than significant. While the BDFP could contribute to cumulative adverse effects on special-status bats or maternal roosts in the vicinity of the project site and construction staging areas, after mitigation the cumulative contribution of the BDFP would not be considerable and the cumulative impact on biological resources would be ***less than significant with mitigation***.

> **Mitigation Measure M-BI-1: Protective Measures for Special-Status Bats and Maternity Roosts** (see Impact BI-1)

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4.15 Geology, Soils, and Paleontological Resources

This section addresses the geologic and soils impacts that could result from construction and operation of the Biosolids Digester Facilities Project (BDFP or project) and identifies mitigation measures to avoid or reduce significant adverse impacts, as appropriate. It includes an evaluation of seismic impacts related to fault rupture; seismically induced ground shaking, ground failure (e.g., liquefaction), and landslides; soil erosion and loss of topsoil; construction on unstable soil or geologic units; and the potential to encounter unique paleontological resources. Regarding erosion issues, refer also to Section 4.16, Hydrology and Water Quality.

4.15.1 Setting

4.15.1.1 Regional Setting

San Francisco is located in the northern portion of the San Francisco Peninsula, part of the geologically complex California Coast Ranges geomorphic province.[1] The Coast Ranges province is characterized by a series of northwest-trending ridges and valleys that run roughly parallel to the San Andreas fault zone and can be further divided into the northern and southern ranges that are separated by San Francisco Bay. San Francisco Bay lies within a broad depression created from an east-west expansion between the San Andreas and the Hayward fault systems. The tectonic forces that dominate the region developed from the margin between the Pacific Plate and the North American Plate where the Pacific Plate slowly creeps northward past the North American Plate on the San Andreas, Hayward, and associated subsidiary faults. The Bay and northern portion of the San Francisco Peninsula are within a structural down-dropped block between the northern Santa Cruz Mountains to the west and Diablo Mountain Range to the east. Much of the Coast Ranges province is composed of marine sedimentary deposits and volcanic rocks. The relatively thick marine sediments dip east beneath the alluvium of the Great Valley.

The northwesterly trend of ridges and valleys characteristic of the Coast Ranges is obscured in San Francisco, except for features such as Russian Hill, Telegraph Hill, Hunters Point, and Potrero Hill. These relatively rugged hills are formed by Jurassic- to Cretaceous-aged bedrock of the Franciscan Complex that underlies San Francisco.[2] Fluctuating sea levels during the Quaternary period (the last 1.8 million years) have resulted in alternating sequences of terrestrial[3] and estuarine[4] sediments over the eroded bedrock surface in San Francisco. Historical development of San Francisco resulted in the placement of artificial fill over portions of the Bay in an effort to reclaim land.

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1 Norris, Robert M. and Robert W. Webb, *Geology of California*, second edition, 1990.

2 The Jurassic and Cretaceous periods spanned the time period from approximately 160 to 70 million years ago. Franciscan Complex rocks formed during that time include volcanic rocks such as basalt, radiolarian cherts, greywacke sandstones, limestones, serpentinite, shale, and high-pressure metamorphic rocks such as blueschist. The rocks have been deformed and metamorphosed over time as a result of tectonic activity along the California coastal margin.

3 Terrestrial sediments consist of mixtures of gravel, sand, silt, and clay deposited by rivers and streams, and are generally referred to as alluvial deposits.

4 Estuarine sediments generally consist of silts and clays deposited in inland marine areas affected by fresh water. These sediments are often rich in organic matter and sometimes contain sand. San Francisco Bay and its adjacent tidal marshlands are estuarine environments.

4.15.1.2 Geology of Project Site and Off-Site Staging Areas

Project Site

The project site is located in a stream-cut valley along ancestral Islais Creek that eroded the northwest-trending bedrock ridge that is evident to the north and south of the site.[5] Within the Islais Creek basin, the surface deposits are mapped as artificial fill overlying tidal flat deposits. These units are underlain by 200 feet of alluvial and marine deposits, and then Franciscan Complex bedrock. The bedrock ridge is known as the Hunters Point shear zone.

As reported in the geotechnical interpretive report for the project, the Hunters Point shear zone is part of a major structural zone marked by shallow bedrock that extends southwesterly across the peninsula and extends into the Bay. The shear zone bedrock predominantly consists of a regionally extensive serpentinite body surrounded by a shale matrix mélange. The Hunters Point shear zone is a structural feature within the Franciscan Complex bedrock related to ancient subduction at the western North American plate margin from the Late Jurassic through the Miocene; it is not an active seismologic feature and is not considered an active fault by the California Geological Survey (CGS).

The specific geologic units beneath the project site are as follows (from shallowest to deepest):

> ***Artificial Fill:*** Artificial fill depths across the project site range from approximately 10 to 18 feet below ground surface (bgs). The elevation of the bottom of the artificial fill ranges from -8 to -16 feet San Francisco City Datum (SFD).[6] Some isolated areas of the BDFP site are underlain by deeper pockets of fill (on the order of 22 to 25 feet bgs), which appear to be backfilled trenches/excavations. The artificial fill is highly variable, ranging from gravels and sands to silty, sandy, and gravelly clay and silt. The fill includes gravel, cobbles, and boulders composed of Franciscan Complex sandstone, shale, and serpentinite. Many borings encountered rubble and debris including brick, asphalt, concrete, and wood. At the BDFP site, the fill contains pockets of loose, liquefiable sand.
>
> ***Young Bay Mud.*** Young bay mud under the project site is soft, highly compressible, and low strength, and has very low permeabilities. The elevation of the top of young bay mud is consistent beneath the site at approximately -8 to -16 feet SFD. The thickness of young bay mud beneath the site ranges from about 2 to 37 feet, with the thickest deposits at the north end and the thinnest to the south. The young bay mud is generally about 15 to 20 feet thick at most of the proposed structure sites.
>
> ***Upper Layered Sediments.*** The upper layered sediments, consisting of interbeds of sand and clay, were deposited along the margins of San Francisco Bay during the Pleistocene age glacial period (between 11,500 and 1.8 million years ago) while the bay mud (clay) was deposited further offshore. In the project area, the upper layered sediments generally consist of interbedded sand and clay layers. Except for a 5- to 10-foot-thick layer of loose to medium-dense sand immediately below the young bay mud, referred to as the transition zone, the sand layers are dense to very dense, fine to medium grained, poorly graded sand, silty sand, and clayey sand. The clay layers consist of lean to fat clay with minor sandy clay layers that is stiff

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5 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

6 San Francisco City Datum establishes the city's zero point for surveying purposes at approximately 8.6 feet above the mean sea level established by 1929 United States Geological Survey datum, and approximately 11.35 feet above the 1988 North American Vertical Datum.

to very stiff. The thickness of the upper layered sediments encountered beneath the project site ranges from about 135 feet at the south end of the site to 95 feet at the north end. The top of the upper layered sediments occurs at an elevation of about -12 to -54 feet SFD.

Old Bay Clay. The old bay clay consists of very stiff to hard lean clay or fat clay, with thin interbeds of gravelly clay, silty sand, silty sand to poorly graded sand, and clayey sand. The thickness of the old bay clay ranges from 32 to 59 feet, with the greatest thickness measured in the north-central part of the site.

Older Colluvium. Older colluvium represents slope debris formed on the underlying weathered bedrock. Typically, the older colluvium measures 6 to 18 feet thick, although unusually thick and thin units were present in the west and east ends of the site, respectively. The variation in thickness likely reflects the local topographic relief on the underlying bedrock surface. The older colluvium generally consists of dense gravelly clay and clayey gravel with fragments of distinctly Franciscan Complex rock types (sandstone, chert, shale).

Franciscan Complex. The deep borings encountered Franciscan complex bedrock at depths of greater than 200 feet bgs. The bedrock predominantly consists of sandstone and shale. The uppermost layer is weathered and grades downward to slightly weathered rock. The bedrock is soft to moderately hard, intensely fractured, and contains interbedded sandstone and shale. Melange and sheared shale were encountered below sandstone and shale at a depth of 233 feet in one boring. Serpentinite bedrock was identified in two borings at depths of 225 and 227 feet bgs. The top of bedrock is generally encountered at 200 to 215 feet bgs throughout the project site, although shallow bedrock (184 feet bgs) in one boring and deep bedrock (220 to 235 feet bgs) in four borings reflect the northwest slope from the bedrock ridge along the Hunters Point shear zone toward the center of the Islais Creek basin.

Groundwater levels at the project site are monitored in five piezometers[7] installed within the project site. Shallow groundwater within the artificial fill materials is encountered at approximately 8 to 12 feet bgs, and the peak high groundwater depth is as shallow as 5 feet bgs.[8] Groundwater within the upper layered sediments occurs under confined conditions, and the groundwater surface rises to approximately 1 foot to 4 feet bgs in piezometers installed in these materials.[9] These groundwater levels vary seasonally, and the SFPUC is conducting groundwater monitoring to establish seasonal fluctuations in groundwater levels.

Off-Site Staging Areas

The off-site staging areas at Pier 94 Backlands and Pier 94/96 are in areas underlain by artificial fill materials, then clay to depths of between 70 and 75 feet bgs. Old Bay Clay is encountered beneath the clay. There is also a debris dike near the bank of Islais Creek Channel.[10] As described in a 2012 geotechnical report for the site, a regulated landfill is within the Pier 94 Backlands, underlying the

7 A piezometer is a type of well installed to monitor groundwater levels below the ground surface.

8 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

9 Confined groundwater conditions occur when a water-bearing zone is overlain by relatively impermeable materials such as clay and the groundwater is under pressure. Groundwater levels may rise above the top of the aquifer when it is penetrated by a piezometer.

10 Bonilla, M.G., Preliminary Geologic Map of the San Francisco South 7.5′ Quadrangle and Part of the Hunters Point 7.5′ Quadrangle, San Francisco Bay Area, California, 1998. Digital database prepared by Carl Wentworth, Marjorie Lucks, Heather Schoonover, Scott Graham, and Thomas May, United States Geological Survey Open File Report 98-354.

northern portion of the Pier 94 staging areas (refer to Figure 4.17-1 in Section 4.17, Hazards and Hazardous Materials).[11] The landfill is covered with a soil cap consisting of 2.5 to 8 feet of loose to very dense sands and gravels with variable amounts of clay and silt, and occasional concrete, brick, and serpentinite fragments. The cap is underlain by construction debris and municipal waste, dredge spoils that were placed before the landfill began operation, and clay.

4.15.1.3 Geologic Hazards

Settlement

The young bay mud (which underlies the project site) is saturated, soft, and compressible, and the thickness of this geologic unit is about 5 to 35 feet. While the placement of the existing fill at the SEP would have already consolidated the young bay mud to some degree, it is likely that the site is still undergoing some settlement from continued consolidation of the young bay mud.[12] The geotechnical interpretive report for the project estimates that the young bay mud has undergone approximately 90 percent to nearly 100 percent of its primary consolidation due to the historical placement of fill. Ongoing settlement as a result of loading from the artificial fill is estimated to be on the order of 1 inch in the southern portion of the project site to 4 inches or more in the northern portion of the project site over the next 10 to 50 years.

When new loads such as buildings are placed on it, the soft young bay mud could compress and settle even more than estimated above. Placement of the loads could also result in plastic deformation and lateral movement, sometimes accompanied by upthrusting in adjacent areas (creation of so-called "mud waves") or underwater landsliding. The young bay mud has low shear strength (i.e., low resistance to downslope movement of rock and soil). For these reasons, the young bay mud is not considered suitable material for bearing foundations of anything but very light structures and is usually not relied upon to support vertical loads.

Slope Failure

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, triggered either by static (i.e., gravity) or dynamic (i.e., earthquake) forces. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience soil slumps, rapid debris flows, or deep-seated rotational slides. Slope stability can depend on a number of complex variables, including site geology, soil structure, amount of groundwater, and external processes such as climate, topography, slope geometry, and human activity. The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope (e.g., excavation at the bottom of a slope). Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps (a line of cliffs formed by faulting or fracturing) and slanted vegetation.

[11] Treadwell & Rollo/RYGC, a Joint Venture, Geotechnical Investigation, Pier 94 Backland Improvements, San Francisco, California. July 5, 2012.
[12] Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

The best available predictor of where slides and earth flows might occur is the distribution of past movements.[13] In 1997, the United States Geological Survey (USGS) released a preliminary map and geographic information system (GIS) database that provides a summary of the distribution of landslides evident in the landscape of the San Francisco Bay region.[14] The map is a digitized nine-county compilation of existing landslides that has been used to divide the area into four landslide zones: "mostly landslides," "many landslides," "few landslides," and "flatlands." The project site and off-site staging areas are located within an area identified as "flatlands," defined as areas of gentle slope at low elevation that have little or no potential for the formation of slumps, translational slides (a downslope movement of material that occurs along a distinctive surface of weakness such as a fault, joint, or bedding plane), or earthflows (a downslope flow of fine-grained materials that have been saturated with water and move under the pull of gravity), except along stream banks and terrace margins.

Soil Hazards

In urbanized areas, such as the project site and off-site staging areas, native soils have commonly been removed or have been reworked and combined with imported fill materials as a result of earthwork activities associated with development. The soils mapped by the federal Natural Resources Conservation Service (NRCS) at the project site and off-site staging areas are Urban land-Orthents-reclaimed complex (0 to 2 percent slopes) that are derived from tidal flats.[15,16] This classification indicates that the soils present in the project site and off-site staging areas are disturbed and mostly covered by streets, parking lots, buildings, and other structures.

Problematic soils, such as those that are expansive or corrosive, can damage structures and buried utilities and increase maintenance requirements. Expansive soils are characterized by their ability to undergo significant volume change (i.e., to shrink and swell) due to variations in moisture content. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.[17] Expansive soils are typically very fine grained and have a high to very high percentage of clay. Expansion and contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can cause damage and/or distress to structures and equipment. The artificial fill beneath the project site is predominantly sandy and gravelly and not likely expansive. The young bay mud is below the water table and is permanently saturated, and therefore it would not be subject to moisture changes that would cause expansion and contraction of the clay materials.

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13 Nilsen, T.H. and B.L. Turner, *Influence of Rainfall and Ancient Landslide Deposits on Recent Landslides (1950-71) in Urban Areas of Contra Costa County, California*, U.S. Geological Survey Bulletin 1388, 1975.

14 United States Geological Survey (USGS), *Summary Distribution of Slides and Earth Flows in the San Francisco County, California,* Open File Report 97-745 Part C, by C.M. Wentworth, S.E. Graham, R.J. Pike, G.S. Beukelman, D.W. Ramsey, and A.D. Barron, 1997. Available online at http://pubs.usgs.gov/of/1997/of97-745/sf-sef.pdf. Accessed on August 9, 2016.

15 United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Custom Soil Resource Report for San Mateo County, Eastern Part, and San Francisco County, California, Southeast Plant and Surrounding Areas October 8, 2015.

16 United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Custom Soil Resource Report for Staging Areas, San Mateo County, Eastern Part, and San Francisco County, California, October 8, 2015.

17 Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

The corrosivity of soils is commonly related to several key parameters, including soil resistivity, the presence of chlorides and sulfates, oxygen content, and pH. Typically, the most corrosive soils are those with the lowest pH and highest concentration of chlorides and sulfates. Alternating wet and dry conditions can result in a concentration of chlorides and sulfates that can break down the protective corrosion films and coatings on the surfaces of building materials. High-sulfate soils are also corrosive to concrete and may prevent complete curing, reducing the strength of the concrete considerably. Low pH and/or low-resistivity soils can corrode buried or partially buried metal structures. The effects of corrosion can potentially require increased maintenance or eventually lead to structural failure. The geotechnical interpretive report for the BDFP reports that the young bay mud and upper layered sediments, due to their chloride and sulfate content, may be corrosive to underground structures.[18] Resistivity measurements indicate that the soils underlying the site are moderately to severely corrosive to uncoated ferrous materials, which could include steel, cast iron, or ductile iron.

4.15.1.4 Regional Faulting and Seismic Hazards

The San Francisco Bay Area is situated near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. Since the Miocene epoch (approximately 23 million years ago), about 200 miles of right-lateral movement[19] have occurred along the San Andreas fault zone to accommodate the relative movement between these two plates. The movement between the Pacific Plate and the North American Plate generally occurs across a 50-mile-wide zone extending from the San Gregorio fault in the southwest to the Great Valley Thrust Belt to the northeast. In addition to the right-lateral slip movement between the two tectonic plates, portions of the North American Plate have moved toward each other during the last 3.5 million years, resulting in compressional forces at the latitude of San Francisco Bay.[20]

Active and Potentially Active Faults

Figure 4.15-1 shows the locations of active[21] and potentially active[22] faults in the San Francisco Bay region. The San Andreas, San Gregorio, Hayward-Rodgers Creek, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville strike-slip faults[23] are active faults of the San Andreas system that predominantly accommodate lateral movement between the North American and Pacific tectonic plates. Active blind- and reverse-thrust faults[24] in the San Francisco Bay region that accommodate

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18 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

19 The Pacific Plate and the North American Plate are moving past each other along the San Andreas fault zone; "right-lateral movement" means that they are moving to the right relative to each other.

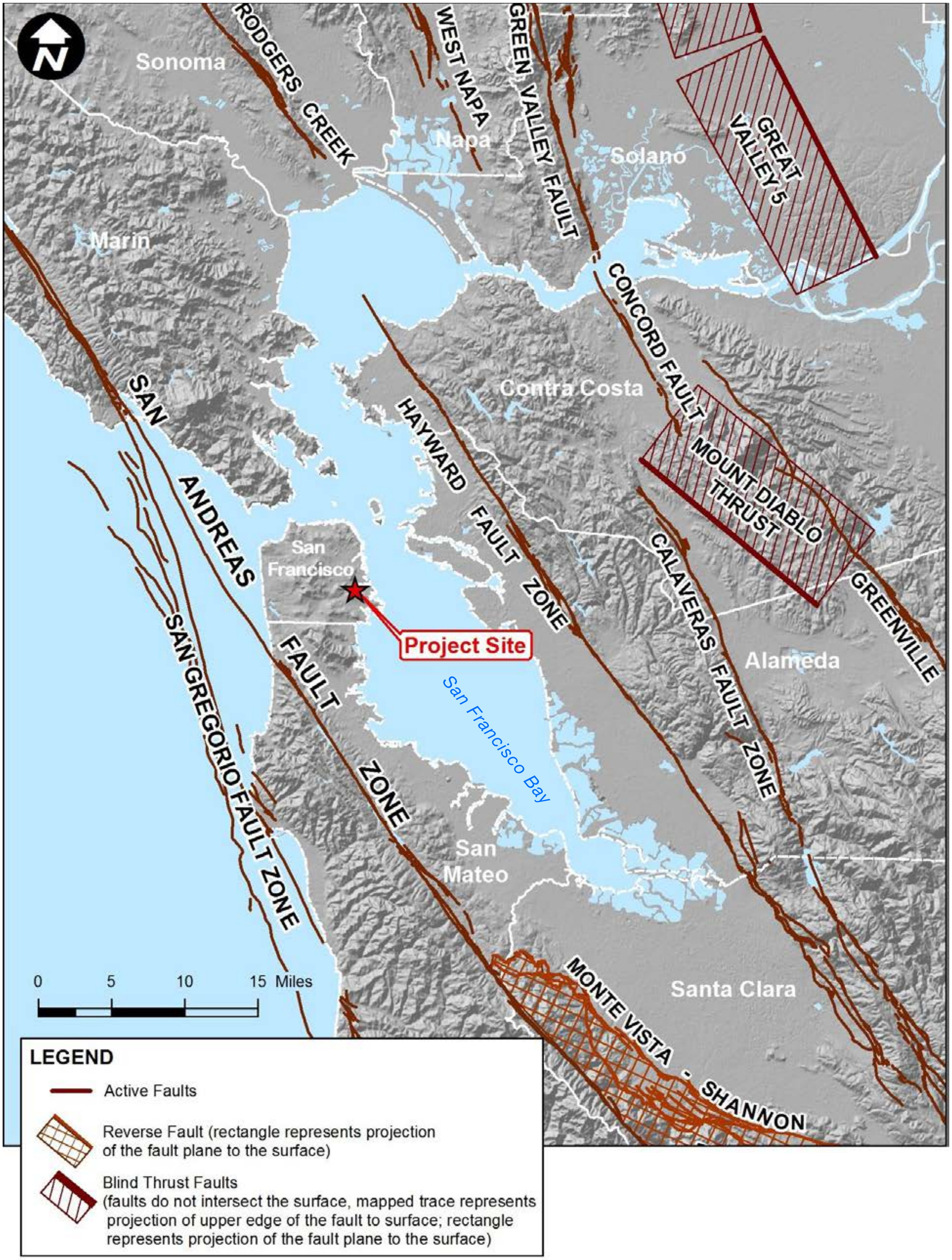
20 Fenton, C.H. and C.S. Hitchcock, *Recent geomorphic and paleoseismic investigations of thrust faults in Santa Clara Valley, California*, in H. Ferriz and R. Anderson (eds.), Engineering Geology Practice in Northern California: California Division of Mines and Geology Bulletin 210, 2001.

21 An active fault is one that shows geologic evidence of movement within Holocene time (approximately the last 11,000 years).

22 A potentially active fault is one that shows geologic evidence of movement during the Quaternary (approximately the last 1.8 million years).

23 Strike-slip faults involve the two blocks moving parallel to each other without a vertical component of movement.

24 A reverse fault is one with predominantly vertical movement in which the upper block moves upward in relation to the lower block; a thrust fault is a low-angle reverse fault. Blind-thrust faults are low-angled subterranean faults that have no surface expression.



SOURCE: SFPUC, Brown and Caldwell with CH2MHILL and Black & Veatch, Geotechnical Interpretive Report, February 2017

SFPUC Biosolids Digester Facilities

Figure 4.15-1
Regional Fault Map

compressional movement include the Monte Vista–Shannon and Mount Diablo faults. The significant active and potentially active faults in the San Francisco Bay Area are the San Andreas, Hayward-Rodgers Creek, San Gregorio, Calaveras, Green Valley, and Mount Diablo faults. **Table 4.15-1** summarizes the distance from the project site to the fault, and the estimated maximum earthquake magnitude (M_w)[25] for each of these faults. The maximum earthquake magnitudes have been determined by the USGS based on several fault parameters such as the slip rate, depth, orientation, and length of the fault.[26]

TABLE 4.15-1
SIGNIFICANT ACTIVE AND POTENTIALLY ACTIVE FAULTS IN SAN FRANCISCO BAY AREA

Fault Name	Age[a]	Maximum Earthquake Magnitude (Mw)[b]	Approximate Distance from Project Site
San Andreas	Historic	7.9	7 miles
Hayward-Rodgers Creek	Historic	7.3	11 miles
San Gregorio	Holocene	7.5	11 miles
Calaveras	Historic	7.0	21 miles
Mount Diablo Thrust	Quaternary (possibly active)	6.7	21 miles
Green Valley	Historic	6.8	24 miles

NOTES:
[a] Holocene faults are those that have shown geologic evidence of movement within Holocene time (approximately the last 11,000 years). Historic faults are Holocene faults that have also demonstrated fault movement within the last 200 years. Quaternary faults have demonstrated displacement within last 1.8 million years. The Mount Diablo fault is a blind fault, meaning there is no surface expression of the fault, making dating its pre-historic activity difficult.
[b] Mw = moment magnitude, which is a measurement of the amount of energy produced by an earthquake and is directly related to the average slip rate and fault rupture area Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in the measured amplitude of an earthquake wave. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

SOURCE: Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

[25] An earthquake is classified by the amount of energy released, expressed as the magnitude of the earthquake. Traditionally, magnitudes have been quantified using the Richter scale. However, seismologists now use a moment magnitude (Mw) scale because it provides a more accurate measurement of the size of major and great earthquakes. Moment magnitude is directly related to the average slip and fault rupture area. Because of the logarithmic basis of the scale, each whole number increase in moment magnitude represents a tenfold increase in the measured amplitude of an earthquake wave. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

[26] United States Geological Survey, Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) – The Time Independent Model, USGS Open File Report 2013-1165, CGS Special Report 228, Southern California Earthquake Center Publication 1792, 2013.

Since 1800, four major earthquakes have been recorded on the San Andreas fault. In 1836, an earthquake with an estimated M_w of 6.4 occurred east of Monterey Bay (San Juan Bautista) on the San Andreas fault.[27] Shortly thereafter, in 1838, an earthquake with an M_w of about 7.4 occurred on the San Andreas fault. The San Francisco earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture approximately 290 miles in length along the San Andreas fault from Shelter Cove to San Juan Bautista. It had an M_w of about 7.8 and was felt 350 miles away in Oregon, Nevada, and Los Angeles. The most recent large earthquake to affect the Bay Area was the Loma Prieta earthquake on October 17, 1989. The epicenter of this earthquake was approximately 60 miles from the project site in the Santa Cruz Mountains. The earthquake had an M_w of 6.9.

On the Hayward fault, an earthquake with an estimated M_w of 7.0 occurred in 1868 on the southern segment (between San Leandro and Fremont). In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake with an M_w of 6.2.

The USGS estimates that it is nearly certain that a Mw 6.7 or higher earthquake will occur on one of the California regional faults in the 30-year period between 2014 and 2044, with a 72 percent likelihood in the San Francisco Region.[28] The likelihood of a Mw 6.7 or higher earthquake occurring on the North San Andreas fault before 2044 is 33 percent.[29] The likelihood of such an event on the Hayward-Rodgers Creek fault and Calaveras fault is 32 and 25 percent, respectively.

Fault Rupture

Fault rupture (a break in the ground along the fault line during an earthquake) almost always follows pre-existing faults, which are zones of weakness. Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface. Surface ruptures associated with the 1906 San Francisco earthquake extended for more than 180 miles, with displacements of up to 21 feet.[30] There is a very low potential for fault rupture within the project site because no active faults cross the site.[31]

Ground Shaking

The intensity of the seismic shaking, or strong ground motion, in the project site during an earthquake depends on the distance between the project site and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the project site. Earthquakes occurring on faults closest to the project site would most likely generate the largest ground motions.

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[27] California Geological Survey, Regional Geologic Mapping Program, Significant California Earthquakes, 2015. Available online at http://www.consrv.ca.gov/cgs/rghm/quakes/Pages/eq_chron.aspx. Accessed on August 9, 2016.

[28] United States Geological Survey (USGS) and United States Department of the Interior, UCERF3: A New Earthquake Forecast for California's Complex Fault System. Fact Sheet 2015–3009, March 2015.

[29] Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

[30] United States Geological Survey (USGS), Earthquake Hazards Program, Historic Earthquakes, San Francisco, California. Available online at http://earthquake.usgs.gov/earthquakes/states/events/1906_04_18.php. Accessed on August 9, 2016.

[31] Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

The peninsula segment of the San Andreas fault and Hayward fault are the closest to the project site. Based on regional shaking hazard maps contained in the Community Safety Element of the *San Francisco General Plan* (which uses shaking hazard mapping done by the Association of Bay Area Governments [ABAG] in 2003), the project site could experience very strong to violent ground shaking due to an earthquake along one of these faults. More recent mapping developed by ABAG in 2013 in conjunction with the USGS indicates the project site could be subjected to very strong ground shaking.[32] The intensity of earthquake-induced ground motions and the potential forces affecting structures within the project site can also be described in terms of "peak ground acceleration," which is represented as a fraction of the acceleration of gravity (g).[33] Site-specific analyses indicate that peak ground accelerations of 0.51g could occur at the project site; and this value correlates with severe ground shaking.[34,35]

Liquefaction

Liquefaction is a phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced, strong ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments, as well as the magnitude of an earthquake. Saturated, unconsolidated silts, sands, silty sands, and gravels within 50 feet of the ground surface are most susceptible to liquefaction. Liquefaction-related phenomena include vertical settlement from densification, lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects.

The project site is located in a potential liquefaction hazard zone identified by the CGS.[36] The liquefaction map of the Community Safety Element of the *San Francisco General Plan* also indicates that the project site is within a potential liquefaction hazard zone. The two geologic units beneath the project site that are considered to have a liquefaction potential are the artificial fill that occurs to depths of 10 to 18 feet bgs and the 5- to 10-foot-thick transition zone of the upper layered sediments immediately beneath the young bay mud deposits.[37] The geotechnical interpretive report for the project concludes that much of the artificial fill includes enough clayey fine materials to preclude widespread liquefaction at the project site, although localized liquefaction is likely to occur within zones of loose to medium dense sandy soils within the artificial fill. The transition zone of the upper layered sediments has a low potential for widespread liquefaction, but may contain some isolated regions with a low to moderate potential for liquefaction. The consequences of liquefaction of these isolated pockets within the transition zone are expected to be limited.

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32 Association of Bay Area Governments, Resilience Program, San Francisco County Earthquake Hazard, 2015. Available online at http://resilience.abag.ca.gov/earthquakes/sanfrancisco/. Accessed on October 8, 2015.
33 Acceleration of gravity (g) = 980 centimeters per second squared. 1.0 g of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds.
34 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.
35 Wald, David, Quitoriano, Vincent, Heaton, Thomas H., and Kanamori, Hiroo, Relationships between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California, Earthquake Spectra, Volume 15, No. 3, August 1999.
36 California Division of Mines and Geology, Seismic Hazard Zones, San Francisco Quadrangle, California Division of Mines and Geology, Official Map, effective November 17, 2001.
37 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

Lateral Spreading

Of the liquefaction hazards, lateral spreading generally causes the most damage. This is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied substrate of large aerial extent.[38] When lateral displacement occurs, the mass moves toward an unconfined area, such as a descending slope or stream-cut bluff. Slopes ranging between 0.3 and 3 percent can displace the surface by several meters to tens of meters. Areas of observed lateral spreading in San Francisco are mainly limited to areas where fill has been placed over marsh and bay mud deposits.[39] After the 1906 earthquake on the San Andreas fault, lateral movements of approximately 2 feet were observed at the waterfront, near the foot of Market Street, and some lateral movement apparently occurred near the foot of Market Street as a result of the 1868 earthquake on the Hayward fault.[40] The potential for lateral spreading at the project site is considered low because of the lack of a continuous layer of liquefiable soils, the level topography of the site, and the distance to the Islais Creek banks.[41]

Earthquake- Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by groundshaking from earthquakes. During an earthquake, settlement can occur as a result of recompaction of the sediments below the water table and dynamic settlement of the dry sediments above the groundwater table. In both cases, settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or bay mud. Near the foot of Market Street, settlements of as much 4 feet occurred during the 1906 earthquake on the San Andreas fault, and some settlement was also reported during the 1868 earthquake on the Hayward fault.[42]

The geotechnical interpretive report for the project concludes that zones of loose to medium-dense sand within the fill could experience localized liquefaction, which could result in uneven settlement across the site in the event of a major earthquake.[43] Seismically induced post-liquefaction settlement of saturated fill below the groundwater table would range from about 0 inch to about 4 inches, with the exception of one location where settlement could be up to about 8 inches. Dynamic settlement of unsaturated sand above the groundwater table would range from 0 inch to about 0.5 inch. In addition, there could be limited settlement of the sediments within the transition zone of the upper layered sediments immediately beneath the young bay mud.

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38 Youd, T.L. and D.M. Perkins, "Mapping Liquefaction Induced Ground Failure Potential," Proceedings of the American Society of Civil Engineers, Journal of the Geotechnical Engineering Division, 1978.
39 Youd, T.L., and S.N. Hoose, "Historic Ground Failures in Northern California Triggered by Earthquakes," Geological Survey Professional Paper 993, 1978.
40 Ibid.
41 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.
42 Youd, T.L., and S.N. Hoose, "Historic Ground Failures in Northern California Triggered by Earthquakes," Geological Survey Professional Paper 993, 1978.
43 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

Earthquake-Induced Landslides

Earthquake motions can also induce substantial stresses in slopes, causing earthquake-induced landslides or ground cracking when the slope fails. Earthquake-induced landslides can occur in areas with steep slopes that are susceptible to strong ground motion during an earthquake. The 1989 Loma Prieta earthquake triggered thousands of landslides over an area of 770 square miles.

The project site and vicinity are relatively flat, and there are no mapped zones of potential earthquake-induced landslides identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990 at or immediately adjacent to the project site.[44] The landslide susceptibility map of the Community Safety Element of the *San Francisco General Plan* also indicates that the project site is not located within a potential landslide hazard area.

4.15.1.5 Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and fossils of microscopic plants and animals (microfossils). The age and abundance of fossils depend on the location, topographic setting, and particular geologic formation in which they are found. Fossil discoveries provide a historical record of past plant and animal life and can assist geologists in dating rock formations. In addition, fossil discoveries can expand the understanding of the time periods and geographic range of existing and extinct flora or fauna.

Assessment Standards

The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on non-renewable paleontological resources.[45] The SVP has helped define the value of paleontological resources and, in particular, states the following:

- Vertebrate fossils and fossiliferous (fossil-containing) deposits are considered significant non-renewable paleontological resources and are afforded protection by federal, state, and local environmental laws and guidelines.
- A paleontological resource is considered to be older than recorded history, or 5,000 years B.P., and is not to be confused with archeological resource sites.
- Invertebrate fossils are not significant paleontological resources, unless they are present with an assemblage of vertebrate fossils or they provide previously unknown information on the origin and character of the plant species, past climatic conditions, or the age of the rock unit itself.
- A project paleontologist, special interest group, lead agency, or local government can designate certain plant or invertebrate fossils as significant.

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[44] California Department of Conservation, Division of Mines and Geology, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2001.

[45] Society of Vertebrate Paleontology (SVP), Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, 2010.

Based on these principles, the SVP has outlined criteria for screening the paleontological potential of rock units and has established assessment and mitigation procedures tailored to accommodating such potential. High- and low-potential rocks are determined by applying the following criteria:

- **High Potential.** Geologic units from which vertebrate or significant invertebrate or plant fossils have been recovered in the past, or rock formations that would be lithologically and temporally suitable for the preservation of fossils. Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant.
- **Low Potential.** Geologic units that are not known to have produced a substantial body of significant paleontological material, as demonstrated by paleontological literature and prior field surveys, and that are poorly represented in institutional collections.

Although not discussed in SVP standards, artificial fills and soils are materials with little or no potential to contain paleontological resources. While such materials were originally derived from rocks, they have been weathered or reworked such that fossils would not likely be preserved.

Paleontological Sensitivity of Geologic Units at Project Site

A search of the paleontological locality database of the University of California Museum of Paleontology (UCMP) identified 13 vertebrate fossil localities in Pleistocene-aged sediments within San Francisco, including one locality near Islais Creek.[46] Species represented include the ground sloth, mammoth, horse, mastodon, and camel. In accordance with SVP criteria for assigning paleontological potential ratings to rock units, the Pleistocene-aged upper layered sediments would have a high paleontological potential because vertebrate fossils have been recovered from similarly aged sediments in the project site vicinity.

As discussed above, fossil remains would be unlikely in the artificial fill of the project site. Although plant and invertebrate fossil remains have been found in young bay mud, which occurs at variable depths throughout the project site, these fossils are abundant and their occurrence would not be noteworthy. Further, no vertebrate fossils have been identified in the young bay mud in San Francisco. Therefore, the artificial fill and young bay mud are considered to have a low paleontological potential.

4.15.2 Regulatory Framework

4.15.2.1 Federal Regulations

There are no federal regulations that apply directly to addressing the seismic and geotechnical aspects of the project.

[46] University of California Museum of Paleontology, UCMP Specimen Search. Available online at http://ucmpdb.berkeley.edu/. Accessed on June 15, 2016.

4.15.2.2 State Regulations

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting in structures for human occupancy. In accordance with this act, the state geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and has published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults and must be set back from the fault (generally 50 feet). Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch that may experience ground surface rupture. The act does not apply to the project because no active faults cross the project site, or anywhere else in San Francisco.[47]

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The act directs the CGS to identify and map areas prone to the earthquake hazards of liquefaction and earthquake-induced landslides (referenced on CGS maps as zones of required investigation). For structures intended for human occupancy (inhabited for 2,000 hours per year or more),[48] the act requires that project sponsors perform site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting of most developments within the zones of required investigation. The project would not be subject to this act because none of the proposed structures would be occupied full time (2,000 hours per year).[49]

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The CBC is based on the International Building Code (IBC), previously known as the Uniform Building Code. The 2013 CBC is based on the 2012 IBC published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees

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[47] California Geological Survey, Table 4, Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of January 2010, 2010. Available online at http://www.conservation.ca.gov/cgs/rghm/ap/pages/affected.aspx. Accessed on August 9, 2016.

[48] Title 14 of the California Code of Regulations, Section 3601(e), defines buildings intended for human occupancy as those that would be inhabited for more than 2,000 hours per year.

[49] California Division of Mines and Geology, Seismic Hazard Zones, San Francisco Quadrangle, California Division of Mines and Geology, Official Map, effective November 17, 2001.

and organizations such as the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI), American Society of Mechanical Engineers/American National Standards Institute (ASME/ANSI), American Institute of Steel Construction (AISC), American Concrete Institute (ACI), and American Water Works Association (AWWA). ASCE/SEI "Minimum Design Loads for Building and Other Structures" (ASCE/SEI 7-10) provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

Public Resources Code

Several sections of the Public Resources Code (PRC) protect paleontological resources. PRC Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted permission.

4.15.2.3 Local Regulations

San Francisco General Plan

The Community Safety Element of the *San Francisco General Plan* includes Objective 1, which requires the City to "reduce structural and non-structural hazards to life safety and minimize property damage resulting from future disasters." The Community Safety Element contains the following relevant seismic and geologic policies in support of this objective:

> ***Policy 1.3:*** Assure that new construction meets current structural and life safety standards.
>
> ***Policy 1.5:*** Support development and amendments to buildings code requirements that meet City seismic performance goals.
>
> ***Policy 1.6:*** Consider site soils conditions when reviewing projects in areas subject to liquefaction or slope instability.
>
> ***Policy 1.7:*** Consider information about geologic hazards whenever City decisions are made that will influence land use, building density, building configurations or infrastructure are made [sic].
>
> ***Policy 1.15:*** Abate structural and non-structural hazards in City-owned structures.
>
> ***Policy 1.18:*** Identify and replace vulnerable infrastructure and critical service lifelines in high-risk areas.

San Francisco Building Code

The full 2013 San Francisco Building Code consists of the 2012 IBC as amended by the 2013 CBC with amendments that address local requirements. The San Francisco amendments have been adopted by the San Francisco Board of Supervisors. Section 1803 of the San Francisco Building Code requires implementation of a site-specific geotechnical investigation to characterize the geologic and seismic conditions at a project site that are used as the basis for the design requirements for the building. The investigation must address the depth to groundwater, soil strength, the presence and adequacy of load-bearing soils, the effects of moisture on the adequacy of soil-bearing capacity, slope stability, compressibility, corrosive and expansive soils, and other geological conditions potentially present at the site. Section 1803.5.8 of the San Francisco Building Code also requires that the geotechnical investigation address requirements for the placement of compacted fill materials, including specifications for the fill material and the minimum in-place density.

The earthquake design requirements of the San Francisco Building Code take into account the occupancy category of the structure (risk category), site class (based on soil properties), soil classifications, and various seismic coefficients, which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site. The classifications range from SDC A (very low seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). SDC F classification is for facilities such as hospitals, police stations, and emergency control centers with a very high seismic vulnerability. Design specifications are determined based on the SDC.

For sites with an SDC of C through F, the investigation must also address seismic slope instability; liquefaction; total and differential settlement; and surface displacement due to faulting or seismically induced lateral spreading or lateral flow. For sites with an SDC of D through F, the investigation must also address lateral earth pressures, the potential for liquefaction, and the potential consequences of liquefaction including total and differential settlements as well as the effects of lateral soil movement and flotation. Recommendations must be included for the appropriate foundation type, structural systems, ground stabilization, or any combination of these to address the effects of liquefaction and related phenomena.

SFPUC General Seismic Design Requirements

While not a codified regulatory requirement, the SFPUC's General Seismic Design Requirements for Design of New Facilities and Upgrade of Existing Facilities (Seismic Design Requirements) set forth consistent criteria for the seismic design and retrofit of San Francisco's water and wastewater infrastructures.[50] In accordance with these design requirements, every project that includes modifications to an existing facility or construction of a new facility must assign the facility a Seismic Performance Class (SPC) based on the seismic environment at the site and importance of the facility in meeting level of service goals for the water or wastewater system. The basic level of service criterion for the wastewater system is to reestablish dry-weather primary treatment levels within 72 hours after a major earthquake. The SPC for a specific facility is determined based on its importance in meeting this basic goal. The three SPCs are SPC-I (Standard), SPC-II (Important), and SPC-III (Critical). Facilities of each SPC must provide life-safety protection for an earthquake likely to affect the site. In addition, the level of service required for each SPC is as follows:

[50] San Francisco Public Utilities Commission (SFPUC), General Seismic Design Requirements for Design of New Facilities and Upgrade of Existing Facilities, Revision 3, June 2014.

- SPC I (Standard): These facilities may not be economically repairable in the event of a major earthquake.
- SPC II (Important): These facilities may experience damage but should be capable of restoration to service within 30 days after a major earthquake.
- SPC III (Critical): These facilities must provide a reasonable expectation of post-earthquake operability and should be capable of restoration to service within 72 hours after a major earthquake.

The General Seismic Design Requirements define a major earthquake as an earthquake with a moment magnitude of Mw 7.8 or more on the San Andreas fault, Mw 7.1 or more on the Hayward fault, or Mw 6.8 or more on the Calaveras fault.

The CBC and ASCE/SEI 7-10 provide similar designations for structures but define them in terms of Risk Categories I through IV. According to Table 5-1 of the SFPUC's General Seismic Design Requirements, SPC I is equivalent to Risk Categories I and II, SPC II is equivalent to Risk Category III, and SPC III is equivalent to Risk Category IV. These risk categories are important in determining the code-based seismic design requirements for the planned structure.

> The BDFP would include critical facilities classified as SPC III, such as the Thermal Hydrolysis Process facilities, anaerobic digesters, and Energy Recovery. The SPC for other individual facilities to be constructed under the BDFP would be determined on the basis of their importance in meeting the level of service goals for the SFPUC's wastewater system.

4.15.3 Impacts and Mitigation Measures

4.15.3.1 Significance Criteria

The project would have a significant effect related to geology, soils, and paleontological resources if it were to:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  – 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);
  – Strong seismic ground shaking;
  – Seismic-related ground failure, including liquefaction; or
  – Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on 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;
- Be located on expansive soil, as defined by the San Francisco Building Code, creating substantial risks to life or property;

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater;
- Change substantially the topography or any unique geologic or physical features of the site; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Due to the nature of the project, there would be no impact related to the following topics for the reasons described below:

- ***Risk of Loss, Injury, or Death Involving Fault Rupture and Landslides.*** The project site is not traversed by an active fault[51] and is not within an area of mapped earthquake-induced landslide susceptibility identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990.[52] Therefore, impacts related to fault rupture and earthquake-induced landslides are not discussed further.
- ***Substantial Loss of Top Soil.*** The project site is built out, and most of the area is covered with impervious surfaces and has a long history of industrial uses. The previous construction of the existing features has removed any top soil (a fertile soil horizon that typically contains a seed base). Soils at the Piers 94/96 staging areas either have been removed as part of development or have not developed a topsoil horizon. Therefore, impacts related to loss of top soil are not discussed further.
- ***Substantial Risks to Life or Property Due to Expansive Soil.*** The artificial fill beneath the project site is sandy and gravelly and would not be expansive. The young bay mud is below the water table and is permanently saturated, and therefore it would not be subject to moisture changes that would cause expansion and contraction of the clay materials. Further, any backfill materials used for the project would be engineered to have a low expansion potential and would be adequately compacted in accordance with the recommendations of the geotechnical report for the project. Therefore, there would be no impact related to expansive soil.
- ***Soils Incapable of Adequately Supporting Use of Septic Tanks or Alternative Wastewater Disposal Systems.*** The project would connect to the combined sewer system and would not use septic tanks or other on-site wastewater disposal systems. Therefore, there would be no impact related to the adequacy of soils to support such systems.
- ***Substantial Change in Topography or Any Unique Geologic or Physical Features.*** The project site and vicinity are completely built out; they have no unique topographic, geologic, or physical features. Construction of the proposed digesters and other facilities would not substantially alter the topography of the area. Following construction of all proposed facilities, the remaining site would be returned to existing grade. Therefore, there would be no impact related to alteration of topography.

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[51] Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, June 2016.
[52] California Department of Conservation, Division of Mines and Geology, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2001.

4.15.3.2 Approach to Analysis

Project Impacts

This analysis evaluates the project's potential construction and operational effects related to geology, soils, and paleontological resources. Potential seismic impacts are assessed with respect to exposure of people or structures to geologic hazards, including ground shaking and liquefaction and other earthquake-related ground failures. In addition, the impact analysis assesses potential impacts related to soil erosion as well as unstable geologic units. The impact analysis assumes that all structures would be completed in compliance with applicable regulations, including the San Francisco Building Code, ASCE/SEI 7-10 "Minimum Design Loads for Buildings and Other Structures," the SFPUC General Seismic Design Requirements, other applicable design standards, and stormwater permitting requirements. For the purposes of this analysis, it is assumed that compliance with these standards would ensure that impacts related to geology and soils would be less than significant, and no mitigation would be required.

Impacts on paleontological resources are assessed with respect to the potential to encounter unique or uncommon paleontological resources such as vertebrate fossils. If unique or uncommon fossils have historically been identified at the project site or vicinity in the geologic units that would be disturbed during construction, the potential to encounter paleontological resources is considered high. In such cases, impacts related to paleontological resources are considered significant and mitigation would be required to reduce impacts to a less-than-significant level.

Cumulative Impacts

Although the entire Bay Area is located within a seismically active region with a high risk of seismic hazards and a wide variety of geologic conditions, the geographic scope of potential geology and soils impacts is restricted to the project site, off-site staging areas, and immediate vicinity because related risks are relatively localized or even site-specific. The cumulative analysis for geology, soils, and paleontological impacts uses a list-based approach to analyze the effects of the project in combination with past, present, and probable future projects in the immediate vicinity. Similar to the analysis for project impacts, the cumulative impact analysis assumes that construction and operation of other projects in the immediate vicinity would also be completed in compliance with applicable building codes and design standards as well as stormwater permitting requirements, which would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. For paleontological resources, the cumulative impact analysis considers whether the cumulative projects in the Islais Creek area could also encounter rock units with a high potential for paleontological resources. The cumulative analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the immediate vicinity, and if so, whether or not the project's contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.15.3.3 Impact Evaluation

Construction and Operational Impacts

Impact GE-1: The project would not expose people or structures to the risk of loss, injury, or death involving seismic ground shaking or seismically induced ground failure. (Less than Significant)

Seismic Ground Shaking

On the basis of regional earthquake hazard mapping by ABAG, the project site could experience very strong ground shaking due to an earthquake on one of the regional faults.[53] The site-specific geotechnical interpretive report for the project estimated that the expected peak ground acceleration at the project site would be 0.51 g; this value correlates with severe ground shaking.

All of the proposed facilities including the digesters would be constructed according to current engineering standards, which would serve to limit damage as a result of seismic ground shaking. These standards include the San Francisco Building Code, ASCE/SEI 7-10 "Minimum Design Loads for Buildings and Other Structures," and the SFPUC's Seismic Design Guidelines. These standards provide definitions of seismic sources and specify the procedures to calculate seismic forces on structures during ground shaking. The Building Seismic Safety Council acknowledges that facilities such as the digesters, buried utility lines, and their appurtenances, are not typical structures and require technical considerations beyond the scope of the CBC.[54] However, these structures are covered by other well-established industry design criteria that are incorporated into the SFPUC's Seismic Design Requirements, such as the ASCE "Design of Municipal Wastewater Treatment Plant" (ASCE Manuals and Reports on Engineering Practice No. 76), ASME/ANSI B.31.2 "Process Piping," ACI 350.3 "Seismic Design of Liquid-Containing Concrete Structures and Commentary," AWWA M11 "Steel Water Pipe: A Guide for Design and Installation, and ACI 318 "Building Code Requirements for Structural Concrete."

In accordance with the SFPUC's General Seismic Design Requirements, the proposed facilities would be designated as SPC I, II, or III depending on their importance in reestablishing dry-weather primary treatment levels within 72 hours after a major earthquake. The design would follow a performance-based approach determined on the basis of the geotechnical condition of the site, with the objective of providing life safety protection for earthquakes likely to affect the site and to be capable of restoring service within 30 days or 72 hours for facilities classified as SPC II or III, respectively.

In its contract specifications, the SFPUC would require design and construction of the proposed facilities in accordance with the San Francisco Building Code and ASCE/SEI 7-10 as well as the SFPUC's Seismic Design Requirements, which incorporate other well-established industry design criteria (such as those described above). Incorporation of the appropriate engineering and design features would ensure both that the proposed facilities would be able to withstand the calculated

[53] Association of Bay Area Governments, Resilience Program, San Francisco County Earthquake Hazard, 2015. Available online at http://resilience.abag.ca.gov/earthquakes/sanfrancisco/. Accessed on August 9, 2016.

[54] Building Seismic Safety Council of the National Institute of Building Sciences (BSSC), NEHRP Recommended Seismic Provisions for New Buildings and Other Structures (FEMA P-750), 2009 Edition.

seismic forces and that they would not be substantially damaged in the event of a major earthquake. Moreover, project implementation would result in a substantial improvement related to seismic safety because it would replace the digesters and many other existing SEP solids treatment facilities that are over 60 years old and were not built to withstand a major earthquake. Therefore, impacts related to ground shaking would be ***less than significant***.

Seismically Induced Ground Failures

The project site is in an area of mapped liquefaction susceptibility identified by the California Department of Conservation under the Seismic Hazards Mapping Act of 1990.[55] The geotechnical interpretive report for the project concluded that localized liquefaction in the artificial fill could result in uneven ground settlement throughout the project site.[56] Liquefaction of the isolated areas of loose to medium-dense sands in the transition zone of the upper layered sediments could result in loss of soil strength and limited settlement. However, this settlement would not likely result in ground surface settlements. Regardless, the proposed facilities would not be subjected to substantial damage due to liquefaction or seismic settlement because they would be constructed in accordance with the San Francisco Building Code and ASCE/SEI 7-10 as well as the SFPUC's General Seismic Design Requirements that incorporate other well-established industry design criteria such as those described above for ground shaking. These standards require that the proposed structures be designed to withstand the expected seismic forces and the effects of liquefaction.

Accordingly, many of the proposed at-grade structures would be supported on deep foundations including piles or drilled shafts that would derive their support from the density of the upper-layered sediments, as described in Chapter 2, *Project Description*. For buildings with foundations at grade or near the transition zone of the upper layered sediments, the geotechnical interpretive report also recommends over-excavating to remove the liquefiable soils and replacing the soils with compacted backfill materials. The geotechnical interpretive report also concludes that lightly loaded equipment pads and other non-essential facilities may be supported on mat foundations designed to accommodate uneven settlement. All structures would be designed to withstand settlement and lateral pressures as a result of liquefaction and related effects as described above. Further, as described in Section 4.15.1, Setting, the geotechnical interpretive report concludes that there is a low potential for lateral spreading at the project site. Therefore, impacts related to liquefaction, earthquake-induced settlement, and lateral spreading would be ***less than significant***.

Mitigation: None required.

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[55] California Department of Conservation, Division of Mines and Geology, State of California Seismic Hazard Zones, City and County of San Francisco, Official Map, November 17, 2001.

[56] Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, June 2016.

Impact GE-2: The project would not result in substantial erosion. (Less than Significant)

Soil movement for excavation and construction of the proposed improvements could result in wind- and water-borne soil erosion. The proposed BDFP would disturb more than 5,000 square feet of land at the project site and nearby staging areas and more than one acre of land at the Pier 94 Backlands and Piers 94/96 staging areas. In compliance with Article 4.1 of the Public Works Code (discussed in Section 4.16, Hydrology and Water Quality), the SFPUC would require the construction contractor to implement an erosion and sediment control plan for all construction activities in accordance with Article 4.1 of the San Francisco Public Works Code (discussed in Section 4.16, Hydrology and Water Quality) to reduce the impact of erosion as a result of storm water runoff from the construction sites. Grading activities at the staging areas would also be subject to the State Water Resources Control Board Construction General Permit (also discussed in Section 4.16, Hydrology and Water Quality), which requires implementation of a Stormwater Pollution Prevention Plan (SWPPP) that addresses erosion during construction. The City must review and approve the erosion and sediment control plan and/or SWPPP prior to implementation, and would conduct periodic inspections to ensure compliance with the either or both plans. With implementation of the approved controls, subject to approval and inspection by the City, substantial erosion would not occur, and impacts related to soil erosion during construction would be ***less than significant***.

Once the proposed improvements are constructed, the staging areas would no longer be used and the entire project site (with the exception of proposed landscaping along Jerrold Avenue and the rail spur and Caltrain tracks) would be paved, which would preclude the opportunity for substantial erosion to occur (refer to Figure 2-11, Landscaping Improvements, in Chapter 2, *Project Description*). Thus, there would be no impacts related to erosion during the operation of the BDFP.

Mitigation: None required.

Impact GE-3: The project site is not located on a geologic unit or soil that is unstable, and the site would not become unstable as a result of the project. (Less than Significant)

The project could induce ground settlement as a result of construction activities including excavation, dewatering, and pile driving. The potential settlement effects of these activities are described below followed by a description of the monitoring program that would be implemented to ensure that settlement does not result in adverse effects. The project would not include any operational activities that would cause any geologic units at the site to become unstable.

Excavation

Project Site. Construction of the digesters would entail excavation to a depth of about 41 feet bgs, which could create unstable slope conditions near the rail spur and Caltrain tracks and in the vicinity of the excavation. However, as discussed in Chapter 2, *Project Description*, the excavation would be supported with a secant pile retaining wall constructed to a depth of approximately 75 feet and secured with tie back anchors to prevent slope failure. The tiebacks for the secant pile walls in the digester excavations would extend 16 feet beyond the SFPUC property line, under the adjacent rail spur and Caltrain right-of-way at a depth of approximately to 60 feet below the Caltrain tracks.

Buildings with basements, the Solids Pretreatment Facility, Solids Odor Control Facility, and the utility tunnel and pipe chases would also require excavation and would be supported on piles. In accordance with the recommendations of the geotechnical interpretive report for the project and California Occupational Safety and Health Administration (Cal/OSHA) regulations pertaining to temporary shoring in Title 8 of the California Code of Regulations, these shallower excavations would be appropriately sloped or supported by conventional shoring methods such as soldier piles and lagging, which would prevent the excavation sidewalls from becoming unstable.

Pier 94 Backlands and Piers 94 and 96 Staging Areas. Installation of new underground utilities at the off-site staging areas at the Pier 94 Backlands and Piers 94 and 96 would entail excavation to approximately 3 feet, which would not be expected to induce settlement because of the shallow depth of excavation.

Construction Dewatering

Shallow groundwater at the project site is encountered at depths ranging from 8 to 12 feet bgs and has been observed as high as 5 feet bgs. The shallow excavations would be sloped or shored. If shored, the shoring systems would extend into the young bay mud, which would limit groundwater inflow to the excavations. In either case, active dewatering systems such as use of a sump pump may be required to maintain a dry working space in these excavations.

Confined groundwater occurs within the upper layered sediments that are encountered at a depth of 35 feet bgs in the vicinity of the proposed digesters.[57] Excavation for the digesters would extend to 41 feet and would encounter confined groundwater within the upper layered sediments which has been observed at depths of as little as 1 foot bgs because the groundwater is under pressure. The secant pile retaining walls constructed as part of the digester excavation would limit groundwater inflow to the excavation; however, the volume of groundwater that would be produced during dewatering is unknown. If other excavations also extended into the upper layered sediments, they would encounter confined groundwater. These excavations would be shored with a system such as a flexible wall system supported with tie backs or internal bracing. However, these deeper excavations could require more extensive groundwater dewatering than the shallow excavations to provide a stable and dry work area and to reduce groundwater. The dewatering may be accomplished with a sump pump or internal dewatering wells. Although unlikely, at sufficient rates, this groundwater dewatering could result in some subsidence in the vicinity of the excavations, which in turn could damage existing nearby structures, including existing streets and sidewalks. However, the SFPUC would conduct monitoring for settlement as discussed below, and would implement corrective actions as needed to ensure that settlement would remain within acceptable levels.

Pile Driving

The current project design estimates the BDFP would require approximately 1,200 piles overall, drilled or driven to a maximum depth of 75 feet bgs. The piles would be installed by drilling shafts (cast-in-drilled-hole piles) or driving (likely pre-stressed concrete piles). If driven, pile driving during project construction may cause the ground to heave up to several inches, and the heave could

57 Brown and Caldwell with CH2M and Black & Veatch, Geotechnical Interpretive Report, February 2017.

adversely affect features in the vicinity of pile-driving activities. However, the SFPUC would conduct monitoring for settlement as discussed below, and would implement corrective actions as needed to ensure that settlement would remain within acceptable levels.

Required Monitoring

As part of project construction activities, the SFPUC would implement a monitoring program in accordance with the recommendations of the geotechnical interpretive report for the project. The monitoring program would include a survey of existing structures, including the rail spur and Caltrain rail tracks, to document any signs or distress prior to beginning construction. The survey would include, but not be limited to, identifying (1) evidence of any existing settlement (e.g., floors, doorways, etc., that are out of level/plumb) and (2) other clear evidence of distress or dilapidation including stress cracks to concrete, masonry, timber, and building facing; cracked or broken windows; and cracks in driveways and walkways. The monitoring program would include placing settlement markers on the ground surface between the excavations and sensitive structures, and regularly monitoring them during construction. Should the amount of settlement exceed pre-determined action trigger levels, corrective action would be taken to halt the settlement. These requirements, consistent with the geotechnical interpretive report, would be incorporated into the construction specifications for the proposed project.

Summary of Impact GE-3

The recommendations of the geotechnical interpretive report for the project and excavation safety requirements specified in Title 8 of the California Code of Regulations, would be incorporated into the construction specifications for the project. Implementation of these requirements in accordance with the construction specifications would ensure that excavation, dewatering, and pile-driving activities undertaken for the project would not result in unstable soils or geologic units. The project would not include any operational activities that would cause any geologic units at the site to become unstable. Therefore, this impact would be ***less than significant***.

Mitigation: None required.

Impact GE-4: The project could directly or indirectly destroy a unique paleontological resource. (Less than Significant with Mitigation)

As discussed in Section 4.15.1, Setting, the Pleistocene-aged upper layered sediments at the project site have a high paleontological sensitivity. Therefore, any excavations that extend into these sediments would have the potential to encounter paleontological resources. Without mitigation, excavation activities could damage or destroy a unique paleontological resource, a significant impact. Implementation of Mitigation Measure M-GE-4, Paleontological Resources Monitoring and Mitigation Program, which requires that excavation activities within the upper layered sediments be monitored by a qualified paleontologist and that any substantial find be adequately curated, would reduce this impact to a ***less-than-significant*** level. Monitoring need not be conducted for construction activities conducted within the artificial fill and young bay mud. During operation, the project would not include any excavation or other ground disturbing activities that could encounter paleontological resources. Therefore, there would be no impact related to paleontological resources during operation.

Mitigation Measure M-GE-4: Paleontological Resources Monitoring and Mitigation Program

The SFPUC shall retain the services of a qualified paleontological consultant having expertise in California paleontology to design and implement a Paleontological Resources Monitoring and Mitigation Program (PRMMP) for construction activities that would disturb the upper layered sediments that are sensitive for paleontological resources. The PRMMP shall not require monitoring in shallower excavations that do not encounter the upper layered sediments.

The PRMMP shall include a description of when and where construction monitoring would be required; emergency discovery procedures; sampling and data recovery procedures; procedure for the preparation, identification, analysis, and curation of fossil specimens and data recovered; pre-construction coordination procedures; and procedures for reporting the results of the monitoring program.

The PRMMP shall be consistent with the Society for Vertebrate Paleontology (SVP) Standard Guidelines for the mitigation of construction–related adverse impacts on paleontological resources and the requirements of the designated repository for any fossils collected. During construction, earth-moving activities shall be monitored by a qualified paleontological consultant having expertise in California paleontology in the areas where these activities have the potential to disturb the upper layered sediments. Monitoring need not be conducted for construction activities that would disturb only artificial fill material and/or young bay mud.

The consultant's work shall be conducted in accordance with this measure and at the direction of the City's Environmental Review Officer (ERO) in coordination with the SFPUC. Plans and reports prepared by the consultant shall be submitted first and directly to the ERO for review and comment and concurrently to the SFPUC for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Paleontological monitoring and/or data recovery programs required by this measure could suspend construction of the project in an appropriate buffer zone around a discovered paleontological resource or area determined in the PRMMP to be sensitive for paleontological resources for up to a maximum of four weeks. At the direction of the ERO and in coordination with the SFPUC, the suspension of construction may be extended beyond four weeks for a reasonable time required to implement appropriate measures in accordance with the PRMMP only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.

Cumulative Impacts

Impact C-GE-1: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative impacts on geology or soils. (Less than Significant)

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis used throughout this EIR and summarizes cumulative projects in the vicinity of the project. Although the entire Bay Area is located within a seismically active region with a high risk of seismic hazards and a wide variety of geologic conditions, the geographic scope of cumulative geology and soils impacts is restricted to the project site and adjacent areas because related risks are relatively localized or even site-specific.

Table 4.1-1 and Figure 4.1-1 summarize cumulative projects in the vicinity of the BDFP. Those projects that are at or adjacent to the SEP, involve construction, but have not yet been constructed include the following (project sponsor is shown in parentheses following project name):

- SEP Southeast Plant Headworks Replacement Project (SFPUC)
- SEP Existing Digester Gas Handling Improvements (SFPUC)
- SEP Building 521 Replacement/ 522 Disinfection Upgrade (SFPUC)
- SEP Power Feed and Primary Switchgear Upgrades (SFPUC)
- SEP Primary/Secondary Clarifier Upgrades (SFPUC)
- SEP Seismic Reliability and Condition Assessment Improvements (SFPUC)
- SEP Oxygen Generation Plant Replacement (SFPUC)
- SEP Repair and Replacement (R&R) Projects (SFPUC)
- Demolition of the Existing SEP Digesters and Southside Renovation Project (SFPUC)
- Eastside Recycled Water Project (SFPUC)
- Central Shops Relocation and Land Reuse (SFPUC and General Services Agency)
- Southeast Greenhouses Demolition (SFPUC)
- Central Bayside System Improvement Project (SFPUC)
- Quint Street Lead Track (Port of San Francisco and Federal Railroad Administration)
- Peninsula Corridor Electrification Project (Caltrain Peninsula Corridor Joint Powers Board)

As shown, most of these projects are proposed by the SFPUC and would involve construction within and adjacent to the SEP property. With regard to seismic hazards, the project area is subject to very strong ground shaking, and the project site could experience liquefaction and related effects in the event of an earthquake on a nearby fault. However, as discussed in Impact GE-1, all of the project components would be designed and constructed in accordance with the most current building code requirements, the SFPUC Seismic Design Guidelines, and applicable engineering standards for seismic safety, which would minimize the potential for damage. All of the SFPUC-sponsored projects would be engineered and designed according to the same or similar building code and engineering standard requirements and the Quint Street Lead Track and Peninsula Corridor Electrification projects would be subject to similar requirements which would minimize safety risks related to seismic hazards. Therefore, cumulative impacts related to seismic hazards would be ***less than significant***.

The proposed project and all of the cumulative projects would also be required to implement the requirements of Article 4.1 of the San Francisco Public Works Code (discussed in more detail in Section 4.16, Hydrology and Water Quality) which would ensure that cumulative impacts of erosion from the construction sites would be ***less than significant*** (see in Impact GE-2 for a discussion of these requirements).

As discussed in Impact GE-3, implementation of the recommendations of the geotechnical reports for each project and excavation safety requirements specified in CCR Title 8 would ensure that construction activities undertaken for the cumulative projects and the BDFP would not result in unstable soils or geologic units. Therefore, cumulative impacts related to unstable soils and geologic units would be ***less than significant***.

Impact C-GE-2: The project, in combination with past, present, and probable future projects, could substantially contribute to cumulative impacts on paleontological resources. (Less than Significant with Mitigation)

The geographic scope of cumulative impacts to paleontological resources includes the Islais Creek area where the upper layered sediments and other Pleistocene-aged sediments could be disturbed. As discussed in Impact GE-4, project-related excavation would encounter the upper layered sediments at several locations, and this geologic unit has a high paleontological sensitivity based on the identification of several vertebrate fossils in similarly aged sediments in the Islais Creek Area. If other construction projects in the project vicinity would disturb upper layered sediments or other Pleistocene-aged sediments, cumulative impacts on paleontological resources could be significant. However, with implementation of Mitigation Measure M-GE-4, Paleontological Resources Monitoring and Mitigation Program, any paleontological resources encountered during excavation associated with the BDFP would be recovered and appropriately curated. Therefore, the project's contribution to this cumulative impact would not be cumulatively considerable, and the impact would be ***less than significant with mitigation***.

Mitigation Measure M-GE-4: Paleontological Resources Monitoring and Mitigation Program (see Impact GE-4)

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4.16 Hydrology and Water Quality

This section describes existing hydrology and water quality in the project area, including wastewater and stormwater management, existing and future flooding, groundwater conditions, and the existing regulatory framework governing these topics. Potential impacts that could result from construction and operation of the project and mitigation measures to avoid or reduce significant adverse impacts are then discussed, as appropriate. The impact assessment includes an evaluation of water quality issues related to construction activities as well as operation of the project, including changes in effluent water quality. **Appendix HYD** presents supporting information for the water quality analysis.

4.16.1 Setting

4.16.1.1 Climate

San Francisco has a Mediterranean climate, with cool, dry summers and mild, wet winters. The mean annual precipitation in San Francisco is approximately 24 inches per year, with most of the rainfall occurring between November and March.[1] The average annual temperature is 57.3 degrees Fahrenheit, with the minimum average monthly temperature occurring in January and December (46 degrees Fahrenheit) and maximum average monthly temperature occurring during September (70 degrees Fahrenheit).

4.16.1.2 San Francisco Bay

The project site is located within the natural drainage area of Islais Creek, which is located approximately 1,200 feet north of the site. Islais Creek flows to Lower San Francisco Bay, more than 5,000 feet east of the project site. The Bay is an estuarine environment that receives saltwater inputs from the Pacific Ocean through the Golden Gate, and freshwater inputs from the Sacramento-San Joaquin Delta to the northeast and from various other tributary rivers and creeks located around the Bay.

4.16.1.3 Wastewater and Stormwater Management

The San Francisco Public Utilities Commission (SFPUC) operates a combined sanitary sewer and stormwater system. Freshwater flow to the Bay from San Francisco has been almost entirely diverted to the City and County of San Francisco's (CCSF's or City's) combined system. However, for portions of the waterfront, including Piers 94 and 96, the Port of San Francisco (Port) manages separated stormwater systems that discharge stormwater directly to the Bay. Both the City's combined sewer system and the Port's separate stormwater systems are described below. All sanitary flows from the project site as well as the staging areas discharge to the City's combined sewer system as described in Section 4.12, Utilities and Service Systems.

[1] U.S. Climate Data, San Francisco. Available online at http://www.usclimatedata.com/climate/san-francisco/california/united-states/usca0987. Accessed on August 29, 2016.

SFPUC Combined Sewer System

The City's combined sewer system is roughly divided into two major drainages: the Bayside and Westside basins, located on either side of the drainage basin boundary shown on **Figure 4.16-1**.[2] The project site is located within the Bayside drainage basin, which covers the east side of San Francisco and consists of three distinct regulatory receiving water basins and their associated watersheds: North Shore (North Shore watershed), Central (Channel watershed in its entirety and a portion of Islais Creek watershed), and South (remainder of the Islais Creek watershed and the entirety of the Yosemite and Sunnydale watersheds). Combined stormwater and wastewater flows from the Bayside drainage basin are transported for treatment to the Southeast Water Pollution Control Plant (Southeast Plant or SEP).

Wastewater Treatment at SEP

As described in Chapter 2, Section 2.2.2, Southeast Water Pollution Control Plant, the SEP includes facilities to provide both primary and secondary treatment of wastewater flows. All discharges from the SEP, whether treated to a primary or secondary level, are disinfected using sodium hypochlorite and dechlorinated with sodium bisulfite to remove any chlorine residual prior to discharge.

During dry weather (typically May through September), wastewater flows consist mainly of industrial wastewater and sanitary sewage. Average dry weather flows to the SEP for years 2012 to 2014 ranged from 58 to 61 million gallons per day (mgd).[3,4] The average dry weather design flow capacity of the SEP is 85 mgd; therefore the existing flows are up to about 72 percent of the treatment capacity, and all dry weather wastewater flow is treated to a secondary level at the SEP. During dry weather, the treated wastewater is discharged to the Bay through the deep water outfall at Pier 80, referred to as the Southeast Bay Outfall and located immediately to the north of the Islais Creek Channel.

During wet weather (generally October through April), the combined sewer system collects large volumes of stormwater runoff in addition to wastewater; the combined stormwater runoff and wastewater are referred to as wet weather flows. Depending on the amount of rainfall, wet weather flows are treated to varying levels before discharge to the Bay. Up to 150 mgd of wet weather flows receive secondary treatment at the SEP.

The SEP can also treat up to an additional 100 mgd to a primary treatment standard plus disinfection for a total wet weather treatment capacity of 250 mgd. Treated wet weather discharges of up to 250 mgd from the SEP occur through the Southeast Bay Outfall directly to the Bay or through the Quint Street outfall to the Islais Creek Channel on the south bank of Islais Creek.

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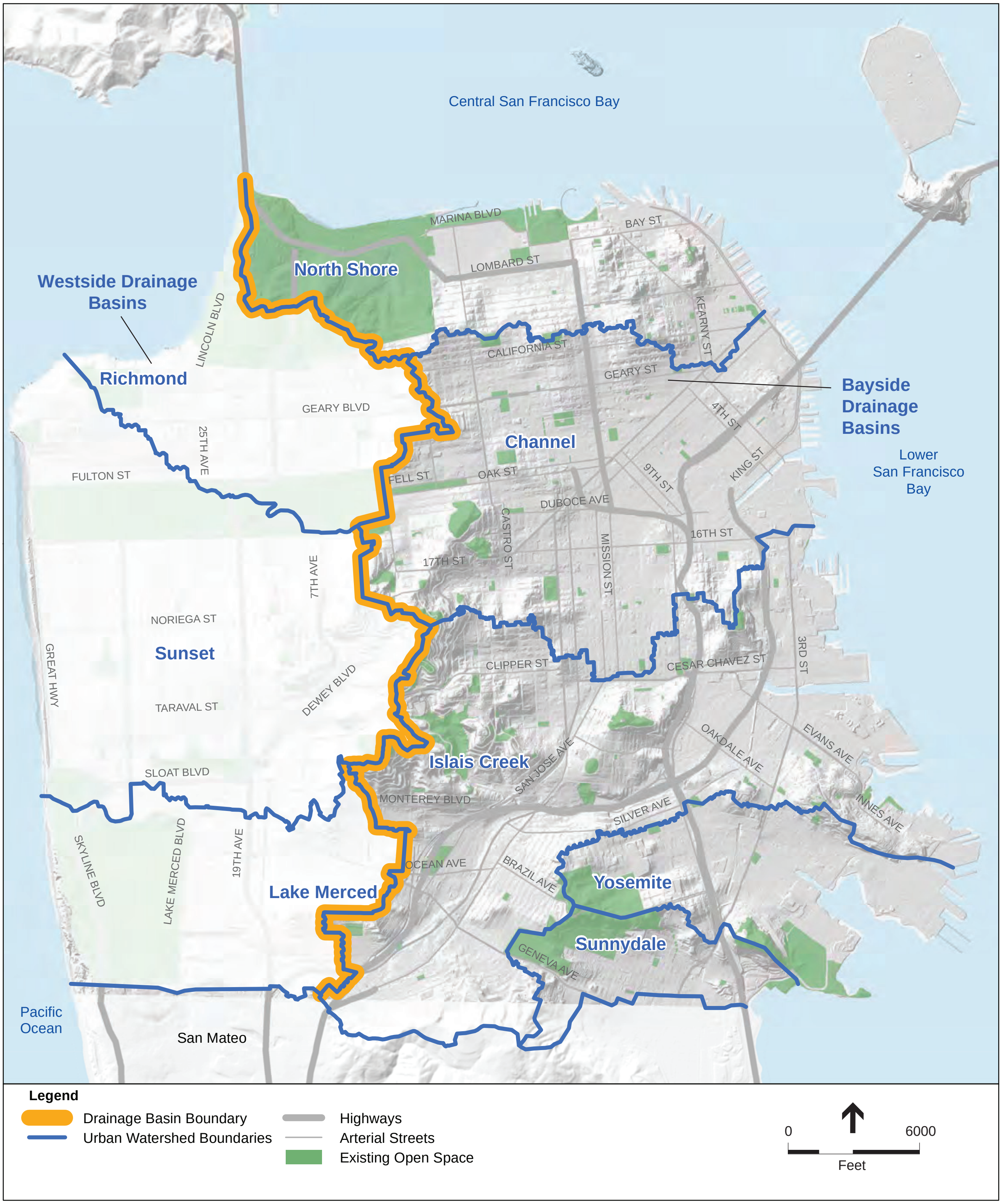
2 Regional Water Quality Control Board, San Francisco Bay Region, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037664, Order No.R2-2013-0029, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities and Wastewater Collection System, adopted August 14, 2013.

3 SFPUC, *Wastewater Flow and Load Projections Technical Memorandum,* 2014. Prepared for San Francisco Public Utilities Commission Sewer System Improvement Program. Updated February 2014.

4 SFPUC, personal communication from Sue Chau to Karen Lancelle et al. regarding RFI and Action Item Responses, September 9, 2015.



SOURCE: Office of Community Investment and Infrastructure, Subsequent Environmental Impact Report, Event Center and Mixed-Use Development at Mission Bay Black 29 to 32, State Clearinghouse No. 2012112045, June 5, 2015

SFPUC Biosolids Digester Facilities

Figure 4.16-1

Bayside Basin Urban Watershed Basins

Up to an additional 150 mgd of wet weather flows receive primary treatment plus disinfection at the North Point Wet Weather Facility (NPF), which operates only during wet weather.

The combined sewer system includes underground, concrete storage and transport boxes that, during wet weather, temporarily retain for later treatment the combined stormwater and sewage flows that exceed the total 400-mgd capacity of the SEP and the NPF. When rainfall intensity results in combined flows that exceed the total capacity of the SEP, the NPF, and the 120-million-gallon capacity of the storage and transport structures, the excess flows are discharged through 29 combined sewer discharge (CSD) structures located along the city's bayside waterfront from the Marina Green to Candlestick Point. Discharges from these structures receive "flow-through treatment," which is similar to primary treatment, to remove settleable solids and floatable materials. Wet weather flows are intermittent throughout the rainy season, and combined sewer discharge events vary in nature and duration, depending largely on the intensity of individual rainstorms.

All discharges from the combined sewer system to the Bay, through either the outfalls or the CSD structures, are operated in compliance with the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act through the National Pollutant Discharge Elimination System (NPDES) permit for discharges from the "Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities, and Wastewater Collection System" (referred to as the Bayside NPDES Permit and described below in Section 4.16.2.2, State Regulations).

Stormwater Runoff at SEP

Stormwater runoff from the SEP is directed to a 15-inch-diameter combined sewer within the SEP and to other combined sewers in Jerrold Avenue, Phelps Street, and Evans Avenue. This runoff is treated at the SEP and discharged via the SEP outfalls.

Port Stormwater Management

The Port manages approximately 7.5 miles of San Francisco's waterfront from Hyde Street Pier on the north to India Basin on the south.[5] The vast majority of this area is served by a separate storm drain system operated by the Port, and stormwater either drains directly to the Bay without treatment, is treated with landscape swales and directed to the Bay, or infiltrates to the ground in areas without a separate drain system. The State Water Resources Control Board (SWRCB) classifies these areas where stormwater drains to the Bay as a municipal separate storm sewer system (or MS4). Accordingly, stormwater discharges from areas managed by the Port are regulated under the SWRCB Water Quality Order No. 2013-0001-DWQ, NPDES General Permit for Waste Discharge Requirements (WDRs) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (the Small MS4 General Stormwater Permit discussed below in Section 4.16.2.2, State Regulations).

Piers 94 and 96 are served by several individual separate stormwater systems that are maintained by the Port and discharge to San Francisco Bay.[6] The Pier 94 Backlands is comprised of unpaved

5 Port of San Francisco, *Storm Water Management Plan 2003-2004*, December 2003.
6 Treadwell and Rollo & Watershed Resources Collaboration Group, *Stormwater Management Study for Port of San Francisco Southern Waterfront, Pier 70 to Pier 96*, September 2002.

surfaces, and stormwater is treated through a system of landscape swales that collect, treat and convey stormwater. Once treated, the stormwater flows to the bay through an outfall.

4.16.1.4 Existing Flooding

Some low-lying areas along San Francisco's Bay shoreline are subject to flooding during periods of extreme high tides, storm surge, and waves, although these occurrences are relatively rare in San Francisco compared to areas prone to hurricanes or other major coastal storms or with developed areas near or below sea level. In 2008, the CCSF adopted interim flood maps depicting the 100-year flood zone[7] along the city's Bay shoreline. In November 2015, the Federal Emergency Management Agency (FEMA) issued Preliminary Flood Insurance Rate Maps (FIRMs) for the CCSF, as part of the National Flood Insurance Program's San Francisco Bay Area Coastal Study, and the CCSF subsequently revised its interim flood maps to reflect the Preliminary FIRMs. As shown on **Figure 4.16-2**, the near-shore areas of Piers 94 and 96 are located within a 100-year flood zone but the remaining staging areas and the project site are not located in an existing 100-year flood zone.[8]

4.16.1.5 Flooding as a Result of Sea Level Rise

Flooding conditions along San Francisco's Bay shoreline will be exacerbated with projected sea level rise over the remainder of the century due to climate change. This section discusses the factors contributing to coastal flooding and the potential for increased flooding at the project site in the future as a result of sea level rise.

Factors Contributing to Coastal Flooding

Coastal areas are vulnerable to periodic flooding due to extreme tides, storm surge, storm waves, and El Niño storm events. These conditions can result in many effects including severe flooding of low-lying areas, such as roads, boardwalks and waterfront promenades; storm drain backup; wave damage to coastal structures; and erosion of natural shorelines. Rising sea level due to climate change has the potential to increase the frequency, severity, and extent of flooding as a result of these conditions, each of which is described below.

Extreme Tides

Diurnal (twice daily) high tides along San Francisco's bay shoreline typically range from approximately -4 to -6 feet San Francisco City Datum (SFD) or 5 to 7 feet North American Vertical Datum of 1988 (NAVD88).[9] Annual maximum tides may exceed 7 feet NAVD88.[10] The twice yearly extreme high and low tides are called "king tides." These occur each year during the winter and summer at times when the earth, moon, and sun are aligned, and the winter event may be amplified

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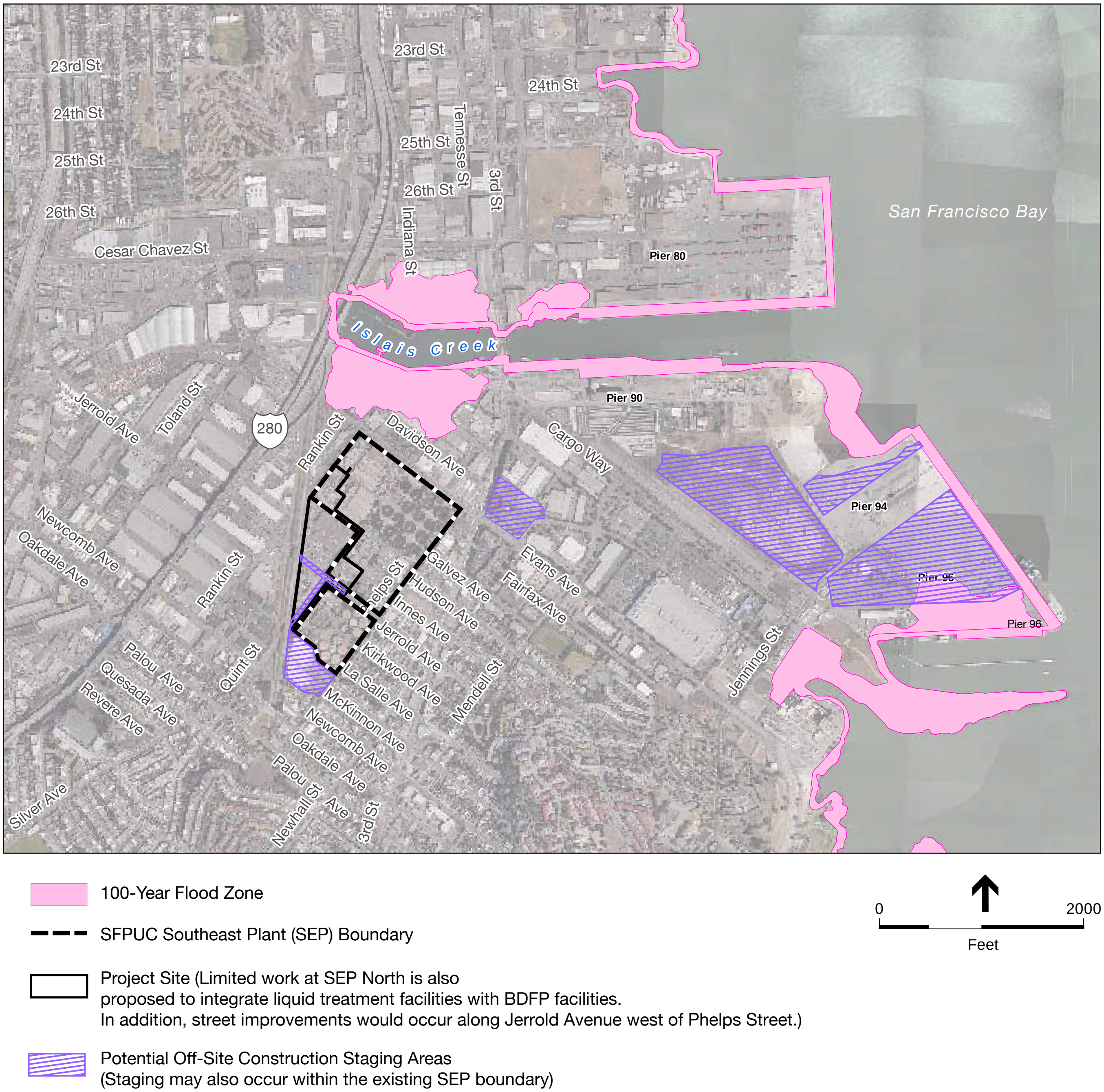
7 The 100-year flood has a 1 percent chance of being equaled or exceeded in any given year (shown in pink on Figure 4.16-2 and identified as the "1% Annual Chance Flood Hazard").

8 City and County of San Francisco, San Francisco Interim Floodplain Map, SE San Francisco, November 12, 2015.

9 San Francisco City Datum (SFD) establishes the City's zero point for surveying purposes at approximately 11.35 feet above the 1988 North American Vertical Datum.

10 SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping, Final Technical Memorandum,* June 2014 (hereinafter "*Bayside Sea Level Rise Mapping*"), p. 10.



SOURCE: City and County of San Francisco,
San Francisco Interim Floodplain Map, East, July 2008

SFPUC Biosolids Digester Facilities

Figure 4.16-2
Existing 100-Year Flood Zones

by winter weather. A portion of The Embarcadero Promenade near Pier 14 and the Marina area in San Francisco experience inundation under current king tide conditions.[11]

Storm Surge

Storm surge occurs when persistent high winds and changes in air pressure push water toward the shore, which can raise the water level near the shoreline by several feet and may persist for several days. Along San Francisco's bay shoreline, storm surge typically raises the surface water elevation 0.5 to 3 feet during major winter storms several times a year.[12] The degree of storm surge depends on the severity of the storm as well as tidal levels at the time of the storm. Storm surge is characterized using a return period that represents the expected frequency of a storm event occurring based on historical information. One-year storm surge is expected to occur each year, while 100-year storm surge (which represents more extreme conditions) has a 1 percent chance of occurring in any year.

Storm Waves

Waves and wave run-up primarily affect a narrow band along the shoreline where wave energy can damage structures and overtop both natural embankments and shoreline protection structures such as seawalls and levees. The influence of waves diminishes inland as wave energy dissipates. In addition, the Pacific Ocean waves, which are generally larger than those originating in the Bay, are substantially dampened along the Bay shoreline due to transformation processes within San Francisco Bay. Along San Francisco's bay shoreline, storm waves typically raise the surface water elevation 1 to 4 feet during major winter storms several times a year.[13]

El Niño Winter Storms

During El Niño events,[14] atmospheric and oceanographic conditions in the Pacific Ocean bring warm, higher waters to the Bay Area and may produce severe winter conditions that bring intense rainfall and storm conditions to the Bay Area. Tides are often elevated 0.5 to 1.0 feet above normal along the coast for months at a time, and additional storm surge and wind setup[15] during storm events can elevate water levels even further. El Niño conditions prevailed in 1977-1978, 1982-1983, 1997-1998, 2009-2010,[16] and 2015-2016.[17]

Sea Level Rise

Sea levels are rising globally due to climate change, and they are expected to continue to rise at an accelerating rate for the foreseeable future. The sea level at the San Francisco tidal gauge has

11 SFPUC, *Bayside Sea Level Rise Mapping*, p. 7.
12 SFPUC, *Bayside Sea Level Rise Mapping*, p. 10.
13 SFPUC, *Bayside Sea Level Rise Mapping*, p. 10.
14 El Niño–Southern Oscillation (ENSO) is a natural oceanic-atmospheric cycle. El Niño conditions are defined by prolonged warming in the Pacific Ocean sea surface temperatures. Typically, this happens at irregular intervals of two to seven years, and can last anywhere from nine months to two years.
15 Setup is the increase in mean water level due to the presence of waves.
16 SFPUC, *Bayside Sea Level Rise Mapping*, p. 8.
17 National Oceanic and Atmospheric Administration, Climate.gov, El Nino and La Nina (El-Nino-Southern Oscillation. Available online at https://www.climate.gov/enso. Accessed on August 9, 2016.

risen approximately 0.8 inch per year since 1897, resulting in about 0.6 foot of sea level rise between that time and 2015.[18] The National Research Council (NRC) 2012 report titled *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (the NRC Report) provides a scientific review of sea level rise for the West Coast and provides the most recent regional sea level rise predictions for 2030, 2050, and 2100, relative to the year 2000 sea level.[19] In this report, the NRC projects that sea levels in the San Francisco Bay area will rise 11 inches by 2050 and 36 inches by 2100 as presented in **Table 4.16-1**. As presented in the NRC Report, these sea level rise projections represent likely sea level rise values based on the current understanding of global climate change and assuming a moderate level of greenhouse gas (GHG) emissions[20] as well as extrapolation of continued accelerating land ice melt patterns.

TABLE 4.16-1
SEA LEVEL RISE ESTIMATES FOR
SAN FRANCISCO BAY RELATIVE TO THE YEAR 2000

Year	Projection	Upper Range
2030	6 inches	12 inches
2050	11 inches	24 inches
2100	36 inches	66 inches

SOURCE: National Research Council, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. 2012

The NRC Report also includes ranges of sea level rise that could occur based on different estimates of GHG emissions and ice melt patterns. The extreme upper limit of the ranges represents unlikely but possible levels of sea level rise that are based on very high GHG emissions scenarios and significant ice melt that is not currently anticipated but could occur. Assuming the maximum level of GHG emissions and ice melt, the NRC anticipates that sea levels in the San Francisco Bay area could rise up to 24 inches by 2050 and 66 inches by 2100 as presented in Table 4.16-1.

These estimates represent the long-term increase in Mean Sea Level and the associated average daily high tide conditions (represented by Mean Higher High Water, or MHHW)[21] that could result from sea level rise; they do not take into account extreme tides, storm surge, storm waves,

18 National Oceanic and Atmospheric Administration, Mean Sea Level Trend 9414290 San Francisco, California. Available online at https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290. Accessed on August 29, 2016.

19 National Research Council, *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. Washington, DC: The National Academies Press, 2012. Available online at http://www.nap.edu/catalog.php?record_id=13389. Accessed on November 28, 2015.

20 Future emissions of GHGs depend on a collection of human decisions at local, regional, national, and international levels as well as potential unknown technological developments. For this reason, future changes in GHG emissions cannot be accurately estimated, and a range of emissions levels is considered in the NRC Report. Estimates of sea level rise relative to thermal expansion of the oceans were formulated using the mid-level, or moderate level, of predicted changes in GHG emissions (from a combination of fossil and non-fossil fuels), as well as an assumption of high economic growth; this represents scenario "A1B" as described by the Intergovernmental Panel on Climate Change (IPCC).

21 MHHW is the average elevation of the higher of the day's two high tides. MHHW is calculated as the average elevation of the daily high water levels observed over a 19-year period known as the "tidal epoch."

or El Niño storm events, all of which can temporarily result in water levels that exceed MHHW, as discussed above.

In March 2013, the California Ocean Protection Council updated its 2010 statewide sea level rise guidance to adopt the NRC Report as the current, best available science on sea level rise for California.[22] The California Coastal Commission supports the use of the NRC Report as the best science currently available in its *Sea Level Rise Policy Guidance*, which it adopted in 2015.[23] The California Coastal Commission guidance emphasizes the importance of regularly updating sea level rise projections as the science continues to advance. The San Francisco Bay Conservation and Development Commission (BCDC) also considers the NRC Report to be the best available science-based prediction of sea level rise for San Francisco Bay. Accordingly, the San Francisco Planning Department considers the NRC Report to be the best science currently available on sea level rise affecting San Francisco for both California Environmental Quality Act (CEQA) and planning purposes.

Although the NRC Report provides the best available sea level rise projections for San Francisco Bay at this time, scientific uncertainty remains regarding the rate and magnitude of sea level rise. Sea level rise projections beyond 2050 are highly dependent on assumptions regarding future global GHG emissions and future changes in the rate of land ice melting. In recognition of this uncertainty, the *State of California Sea-Level Rise Guidance* recommends an adaptive management approach for development in areas that may be subject to sea level rise beyond 2050. Adaptive management is an iterative process that involves monitoring conditions to evaluate whether an area could be inundated as a result of sea level rise, and identifying actions to be implemented to ensure that the area and existing structures are resilient to future flooding conditions.

Sea Level Rise Inundation Mapping

The SFPUC, as part of the Sewer System Improvement Program (SSIP), developed a series of maps published in 2014 that represent areas of inundation along both the bay and ocean shorelines of San Francisco.[24] These maps use a 1-meter horizontal grid resolution[25] based on the 2010/2011 California Coastal Mapping Program LiDAR.[26] The inundation maps synthesize data

[22] State of California Sea-Level Rise Guidance Document. Developed by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), with science support provided by the Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust. March 2013 Update. Available online at http://www.opc.ca.gov/2013/04/update-to-the-sea-level-rise-guidance-document/. Accessed on November 28, 2015.

[23] California Coastal Commission, Sea Level Rise Policy Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits, Unanimously Adopted August 12, 2015. Available online at http://documents.coastal.ca.gov/assets/slr/guidance/August2015/0_Full_Adopted_Sea_Level_Rise_Policy_Guidance.pdf. Accessed on November 28, 2015.

[24] SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping, Final Technical Memorandum,* June 2014.

[25] The horizontal grid resolution of a digital elevation model defines the scale of the features that are modeled; this is generally the minimum resolution necessary to depict levees, berms, and other topographic features important to diverting floodwaters.

[26] LiDAR (Light Detection and Ranging) is a remote sensing technology that measures distance by illuminating a target with a laser and analyzing the reflected light. LiDAR is commonly used to create high-resolution terrain models, topography data sets, and topographic maps.

from the FEMA California Coastal Mapping and Analysis Project, which includes detailed coastal engineering analyses and mapping of the San Francisco Bay shoreline.

The SFPUC inundation maps depict a range of scenarios representing projected future sea level rise conditions in combination with the effects of storm surge. The NRC sea level rise projections are used to represent the projected change in tide elevations relative to 2000 conditions (e.g., the MHHW in 2050 is projected to be 12 inches higher than MHHW in 2000).

Storm surge conditions can cause elevated water levels above typical tide levels. Flooding due to storm surge occurs much less frequently than daily tidal inundation and is typically caused by infrequent meteorological events that result in flooding that lasts for a few tide cycles and then returns to normal tidal conditions. The SFPUC maps represent the infrequent, elevated tidal inundation that could occur from extreme tides and from a 1-year,[27] 2-year, 5-year, 25-year, 50-year, and 100-year storm surge event. Flooding resulting from storm surge would occur on a temporary basis, during and immediately after a storm event or extreme tide.

The following scenarios are representative of the projected increase in tidal elevations that could occur by the year 2050 and the year 2100, based on the NRC's projected level of sea level rise and considering a 100-year (1 percent annual chance) storm surge event:

- 12 inches above year 2000 MHHW (representative of the NRC's projected sea level rise by 2050, no storm surge);
- 36 inches above year 2000 MHHW (representative of the NRC's projected sea level rise by 2100, no storm surge);
- 52 inches above year 2000 MHHW (representative of the NRC's projected sea level rise by 2050 in combination with a 100-year storm surge); and
- 77 inches above year 2000 MHHW (representative of the NRC's projected sea level rise by 2100 in combination with a 100-year storm surge).

The following scenarios are representative of the maximum Bay water elevations that could occur by the year 2100, based on the NRC's upper range of sea level rise and considering 100-year storm surge:

- 66 inches above year 2000 MHHW (representative of the NRC's upper range of sea level rise by 2100, no storm surge); and
- 107 inches above year 2000 MHHW (representative of the NRC's upper range of sea level rise by 2100 in combination with a 100-year storm surge).

The SFPUC cautions that its maps represent a "do nothing" scenario, in which no site-specific measures are taken to prevent future flooding and no area-wide measures such as waterfront protection structures are constructed. In the event that the City undertakes area-wide measures to

[27] A 1-year storm surge event represents the size of storm surge event that is expected to occur on average once per year. A 2-year storm surge would be expected to occur on average once every 2 years (50 percent probability of occurring in any given year).

protect against inundation in the future, the mapping would need to be revised to reflect the modified inundation areas with implementation of these measures. In addition, because the SFPUC sea level rise maps are based on 2010/2011 topographic mapping, they do not account for any changes in site elevations that could result from site development activities.

The SFPUC inundation maps indicate that under existing conditions, the project site would not be inundated with water level rises of 12 inches, which is expected by 2050 according to NRC, even when the effects of 100-year storm surge are considered as shown on **Figure 4.16-3**. Similarly, the project site would not be permanently inundated with 36 inches of sea level rise, which is expected by 2100. However, when the effects of 100-year storm surge are considered in addition to 36 inches of sea level rise, areas within the northern part of the project site could be temporarily subjected to shallow flooding as shown on **Figure 4.16-4**. In the event of worst-case sea-level rise based on the NRC's upper range of sea level rise in combination with 100-year storm surge, the majority of the site could be subject to shallow flooding as shown on **Figure 4.16-5**.

As shown on Figures 4.16-3 through 4.16-5, portions of the staging areas at Piers 94 and 96 and 1550 Evans Avenue could also be temporarily inundated under each of these scenarios due to sea level rise in combination with 100-year storm surge.

MHHW near the project site is at an elevation of -4.9 feet SFD (6.5 feet NAVD88).[28] **Table 4.16-2** presents water elevations near the project site associated with each of the sea level rise scenarios discussed above, based on the existing MHHW elevation.

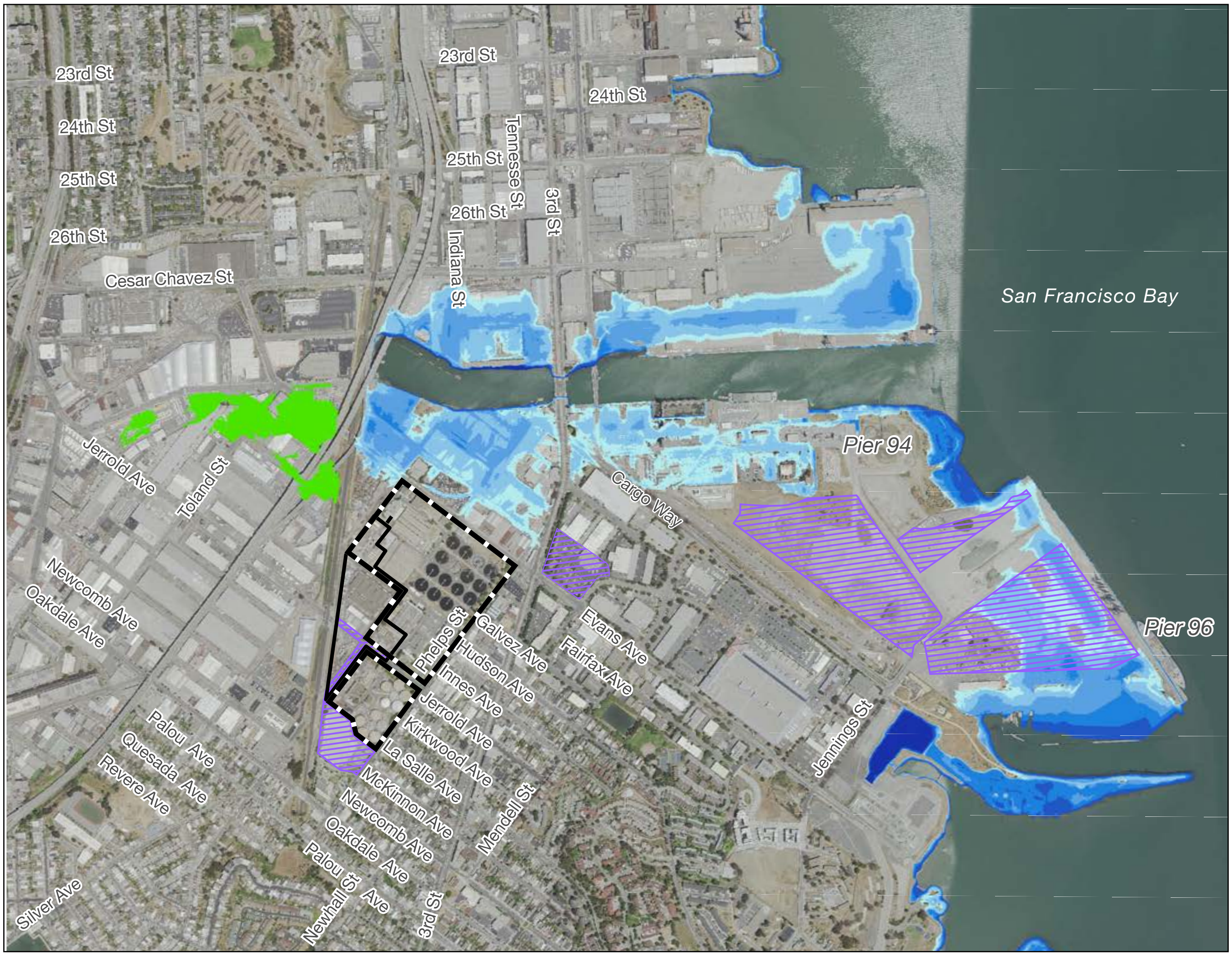
TABLE 4.16-2
WATER ELEVATIONS ASSOCIATED WITH SEA LEVEL RISE PROJECTIONS

Sea Level Rise Scenario	Elevation (feet, San Francisco City Datum)	Elevation (feet, NAVD88)
2000 MHHW with no sea level rise	-4.9	6.5
2000 MHHW plus 100-year storm surge	-1.5	9.9
2000 MHHW plus 11 inches of sea level rise	-4.0	7.4
2000 MHHW plus 11 inches of sea level rise and 100-year storm surge	-0.6	10.8
2000 MHHW plus 36 inches of sea level rise	-1.9	9.5
2000 MHHW plus 36 inches of sea level rise and 100-year storm surge	1.5	12.9
2000 MHHW plus 66 inches of sea level rise (upper range)	0.6	12.0
2000 MHHW plus 66 inches of sea level rise (upper range) and 100-year storm surge	4.0	15.4

NOTES:
MHHW = Mean Higher High Water
NAVD88 = North American Vertical Datum of 1988
San Francisco City Datum is approximately 11.35 feet above NAVD88

SOURCE: SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping Final Technical Memorandum,* 2014; Orion Environmental Associates, Data developed in 2016 for BDFP

28 SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping. Final Technical Memorandum.* June 2014.



Depth in Feet

- 0-2
- 2-4
- 4-6
- 6-8
- 8-10
- 10-12
- 12+
- Disconnected Area >1 Acre

SFPUC Southeast Plant (SEP) Boundary

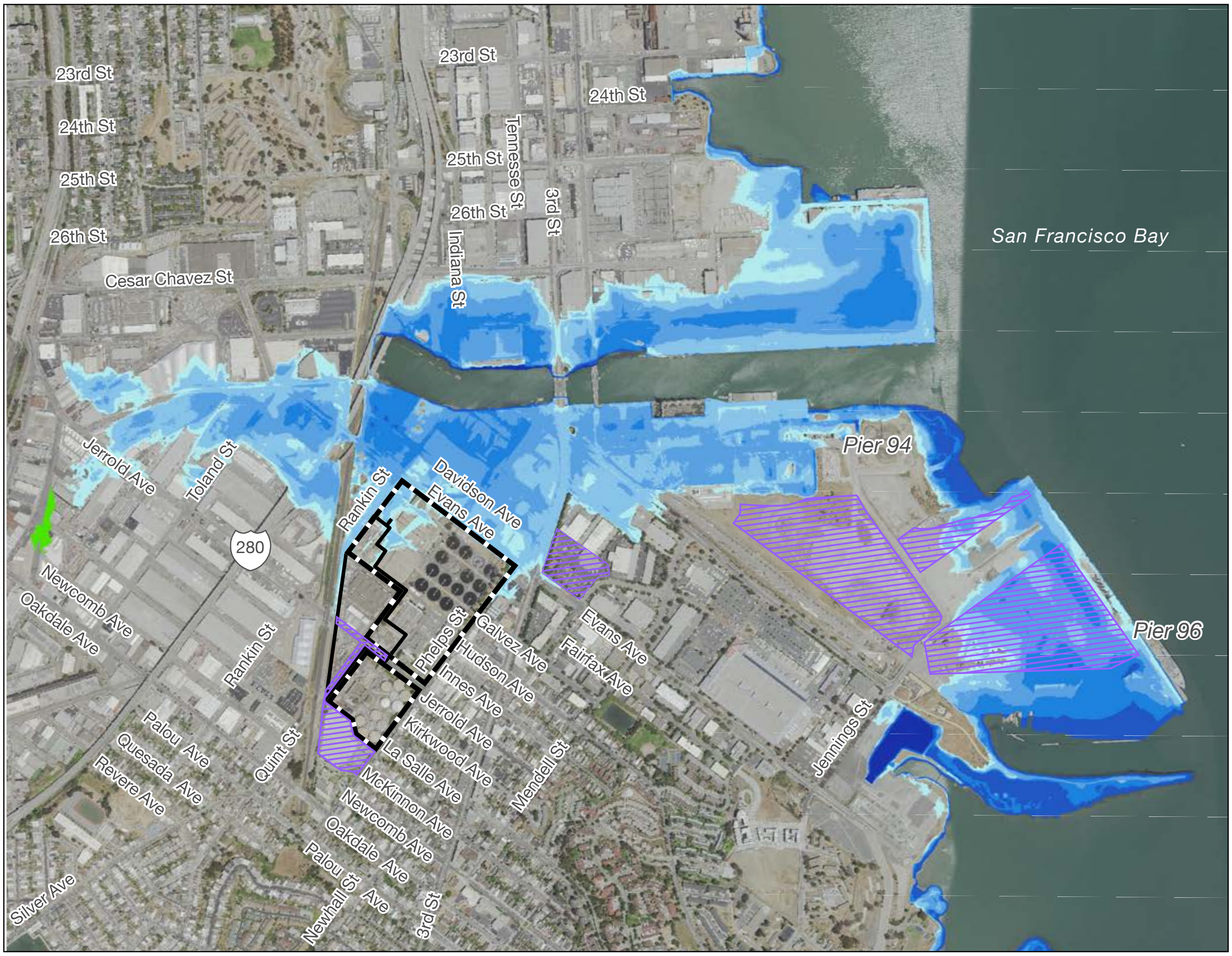
Project Site (Limited work at SEP North is also proposed to integrate liquid treatment facilities with BDFP facilities. In addition, street improvements would occur along Jerrold Avenue west of Phelps Street)

Potential Off-Site Construction Staging Areas (Staging may also occur within the existing SEP boundary)

0 2000
Feet

SOURCE: National Agriculture Imagery Program, Imagery from 2014; SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping, Final Technical Memorandum,* June 2014; SFPUC, *Climate Change Guidance for SSIP Projects memo,* March 23, 2015; ESA+Orion, data developed for BDFP, 2016

Figure 4.16-3
Potential Inundation Areas with 12-inches of Sea Level Rise plus 100-year Storm Surge



Depth in Feet

- 0-2
- 2-4
- 4-6
- 6-8
- 8-10
- 10-12
- 12+
- Disconnected Area >1 Acre

SFPUC Southeast Plant (SEP) Boundary

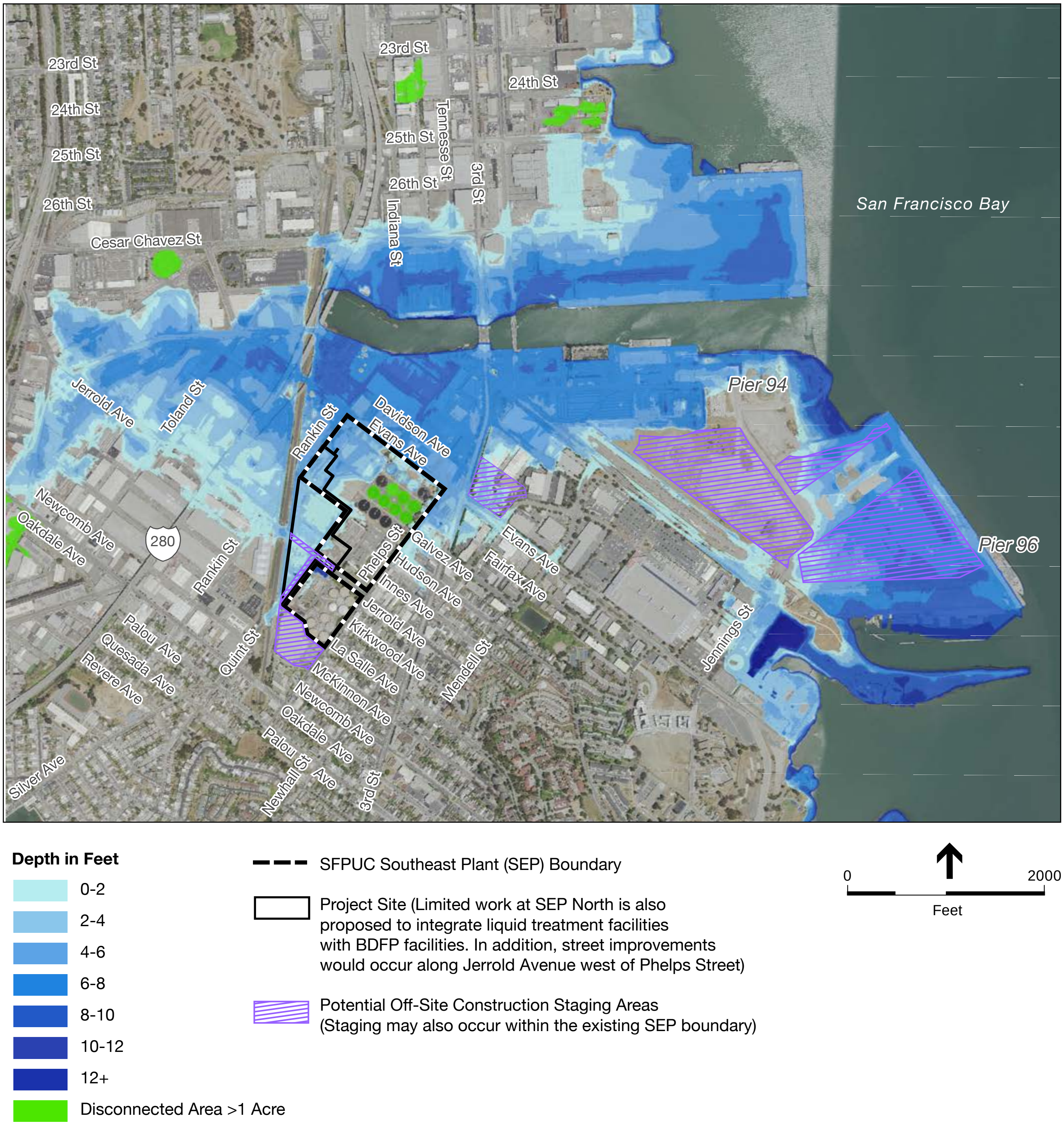
Project Site (Limited work at SEP North is also proposed to integrate liquid treatment facilities with BDFP facilities. In addition, street improvements would occur along Jerrold Avenue west of Phelps Street)

Potential Off-Site Construction Staging Areas (Staging may also occur within the existing SEP boundary)

0 2000 Feet

SOURCE: National Agriculture Imagery Program, Imagery from 2014; SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping, Final Technical Memorandum,* June 2014; SFPUC, *Climate Change Guidance for SSIP Projects memo,* March 23, 2015; ESA+Orion, data developed for BDFP, 2016

Figure 4.16-4
Potential Inundation Areas with 36-inches of Sea Level Rise plus 100-year Storm Surge



SOURCE: National Agriculture Imagery Program, Imagery from 2014; SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping, Final Technical Memorandum,* June 2014; SFPUC, *Climate Change Guidance for SSIP Projects memo,* March 23, 2015; ESA+Orion, data developed for BDFP, 2016

SFPUC Biosolids Digester Facilities

Figure 4.16-5
Potential Inundation Areas with 66-inches of Sea Level Rise plus 100-year Storm Surge

4.16.1.6 Planning for Sea Level Rise in San Francisco

The City has convened an inter-agency Climate Adaptation Working Group to identify ways to make sure that it is prepared to adapt to effects of sea level rise. Participating agencies include the Department of the Environment, SFPUC, Planning Department, City Administrator's office, Port, San Francisco International Airport (SFO), San Francisco Public Works (SFPW), San Francisco Municipal Transportation Agency (SFMTA), San Francisco Department of Public Health (SFDPH), and San Francisco Recreation and Parks Department (SFRPD).

The working group is focusing its effort on the City's most imminent adaptation concerns, including sea level rise along Ocean Beach and shores, flooding from storm surge and extreme rain events, an increased likelihood of extreme heat, and decreased fog that supports local ecosystems such as redwoods. To address sea level rise and flooding, the working group is focusing on efforts to improve the existing coastal flood protection infrastructure in time to prevent significant flooding impacts from sea level rise. The working group will establish requirements addressing proper flood insurance for structures in low-lying areas, flood-resilient construction of new developments within inundation areas, and a low carbon footprint for new developments. The working group is also assessing the use of natural solutions such as wetlands to protect the shoreline.

Mayor Edwin M. Lee also established two interdepartmental committees to manage the City's efforts on addressing sea level rise: the Sea Level Rise (SLR) Coordinating and SLR Technical Committees. The SLR Coordinating Committee was established in February 2005 and is a director-level committee co-chaired by the Director of Citywide Planning at the Planning Department and the City Engineer and Deputy Director at SFPW. SLR Coordinating Committee members also include the Chief Resiliency Officer, and senior staff from the Mayor's Office, the City Administrator's Office, SFO, the Port, the SFPUC, the SFMTA, the Department of Building Inspection (DBI), the Office of Community Investment and Infrastructure (OCII), the Office of Economic and Workforce Development (OEWD), and the Capital Planning Committee. The responsibilities of the SLR Coordinating Committee are as follows:

1. Coordinate the efforts of City departments and advise the Mayor's Office on policies, strategies, initiatives, and resolutions to deal with and plan for potential impact on San Francisco from sea level rise;
2. Coordinate local efforts and initiatives with the work of other governmental entities and various stakeholders at the regional, state, and national levels such as U.S. Environmental Protection Agency (USEPA), U.S. Department of Housing and Urban Development (HUD), Department of the Interior, California Coastal Commission, California Ocean Protection Council, Bay Conservation and Development Commission, etc.;
3. Provide guidance and specific recommendations to City departments with regard to land use and strategies to protect assets and communities along the shoreline;
4. Oversee and guide the existing SLR Technical Committee and implementation of the Capital Planning Guidance to address vulnerability and risks, and adaptability of the City's physical infrastructure; and

5. Promote coordination and collaboration among City departments, private utility providers, and other stakeholders.

The SLR Coordinating Committee is first charged with assessing San Francisco's risk to sea level rise. Once the data analysis phase is complete, the SLR Coordinating Committee will coordinate the City's sea level rise vulnerability assessment and adaptation planning efforts with local, regional, and national governmental and non-governmental organizations and with community stakeholders, as needed. Key to this effort will be determining how to best involve the community.

The SLR Technical Committee was established in February 2015 and is comprised of the same membership that developed the Capital Planning Committee's Sea Level Rise Guidance, including the SFPUC, Port, SFPW, SFO, SFMTA, Capital Planning, and Planning Department. This committee is charged with assisting all City agencies with consistent implementation of the Guidance, revising the Guidance as needed, and assisting the SLR Coordinating Committee as requested.

Guidance for Incorporating Sea Level Rise into Capital Planning

On September 14, 2014, the City's Capital Planning Committee adopted the *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco: Assessing Vulnerability and Risk to Support Adaptation*, which was prepared by the SLR Coordinating Committee. The guidance document has been revised to simplify the analysis of specific sea level rise scenarios and clarify how to select the appropriate scenario for design and planning purposes. The revised document also provides a methodology for determining the design tide for use in project design and planning, and was adopted by the Capital Planning Committee on December 14, 2015.[29]

San Francisco Sea Level Rise Action Plan

In March 2016, the SLR Coordinating Committee released the *San Francisco Sea Level Rise Action Plan*.[30] The Action Plan is intended to guide City departments in their understanding of and adaptation to the impacts of sea level rise, and also identifies what long-term sea level rise means for San Francisco's residents, visitors, economy, and waterfront.

The Action Plan is the first step in the development of the Citywide Sea Level Rise Adaptation Plan, expected to be complete in 2018, which will incorporate the adaptation strategies identified in the Action Plan and help prioritize investments to best improve climate resilience while protecting economic and environmental value. The Adaptation Plan will also identify potential funding sources, governance structures, and implementation timelines.

29 City and County of San Francisco Sea Level Rise Committee, *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco: Assessing Vulnerability and Risk to Support Adaptation*, December 14, 2015. Available online at http://onesanfrancisco.org/wp-content/uploads/Guidance-for-Incorporating-Sea-Level-Rise-into-Capital-Planning1.pdf. Accessed on January 22, 2016.

30 City and County of San Francisco, *Sea Level Rise Action Plan,* March 2016. Available online at: http://default.sfplanning.org/plans-and-programs/planning-for-the-city/sea-level-rise/160309_SLRAP_Final_ED.pdf.

The Action Plan establishes an overarching vision, goals, and a set of guiding principles for sea level rise planning; summarizes current climate science, relevant policies and regulations, and vulnerability and risk assessments conducted to date; identifies data gaps and establishes a framework for further assessment, adaptation planning, and implementation; and provides the foundation and guidance to develop a citywide Sea Level Rise Adaptation Plan.

Climate Change Guidance for SSIP Projects

The SFPUC has prepared guidance specifically designed to protect its three water pollution control facilities (the SEP and NPF on the bayside, and the Oceanside Water Pollution Control Plant and associated Westside Pump Station on the west side) from sea level rise.[31] The San Francisco Design Tides and Sea Level Rise Recommendations prepared by the SFPUC[32] provide guidance for incorporating the physical impacts of projected sea level rise into the design, construction, operation, and maintenance of wastewater facilities in San Francisco. These guidelines incorporate and expand on the Capital Planning Committee *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco: Assessing Vulnerability, Risk, and Adaptation* discussed above.

The recommendations of the guidance document are:

1. Projects should use the 100-year extreme tide elevation (i.e., an extreme tide with an average return period of 100 years or a 1 percent chance of occurring in any given year) for design purposes for projects involving assets that may be sensitive to periodic flooding.

2. Projects should, at a minimum, design for the 100-year extreme tide elevation and "most likely" sea level rise scenario projected to occur at the end of the project's lifespan (functional working life), which may be greater than the project's design life.

3. Projects should, at a minimum, consider adaptation strategies that can account for increases in extreme tide elevations and/or sea level rise projections above and beyond the levels selected for design that are most likely to occur during the project lifespan.

4. A design tide of 10 years plus the "most likely" sea level rise scenario should be chosen by the designer for treatment plant deep water outfall calculations and for combined sewer discharge outflows. The designer should use this design tide in conjunction with maximum design outflows for treatment plants and with maximum design intensity storms for combined sewer discharges.

The guidelines also note that the American Society of Civil Engineers (ASCE) Standard 24-05, *Flood Resistant Design and Construction*,[33] requires buildings and structures in flood hazard areas to withstand the Design Flood Elevation. This requirement is to add freeboard from 1 to 3 feet to the base flood elevation for unknown factors that could increase the height above the base flood elevation.

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[31] SFPUC, *Climate Change Guidance for SSIP Projects memo*, March 23, 2015.
[32] SFPUC, *San Francisco Design Tides and Sea Level Rise Recommendations*, March 12, 2015.
[33] The ASCE has subsequently adopted an updated version of this standard: 24-14-*Flood Resistant Design and Construction.*

The guidelines state that groundwater levels are also expected to increase relative to sea level rise. Accordingly, projects should be designed for a potential 3-foot increase in groundwater elevations by the year 2100.

4.16.1.7 Tsunami and Seiche

Tsunamis (seismic sea waves) are long-period waves that are typically caused by underwater seismic disturbances, volcanic eruptions, or submerged landslides. Tsunamis can travel at speeds up to 700 miles per hour and are typically only 1 to 3 feet high in open ocean water but may increase in height to up to 90 feet as they reach coastal areas, potentially causing large amounts of damage when they reach land.[34] Low-lying coastal areas such as tidal flats, marshlands, and former bay margins that have been artificially filled but are still at or near sea level are generally the most susceptible to tsunami inundation.

A seiche is caused by oscillation of the surface of an enclosed body of water such as San Francisco Bay due to an earthquake or large wind event. Seiches can result in long-period waves that cause run-up or overtopping of adjacent landmasses, similar to tsunami run-up.

Tsunamis in San Francisco Bay

Fifty-one tsunamis have been recorded or observed in San Francisco Bay between 1850 and early 2011.[35] Nine of these tsunamis originated in Alaska and were caused by an earthquake, earthquake and landslide, or volcano and earthquake. The 1906 earthquake generated a 4-inch wave run-up, recorded at the Presidio gage station. In more recent years, it is probable that wave impact occurred in and around the Bay Area resulting from a 1946 earthquake in the Aleutian Islands, a tsunami generated in 1960 that killed 61 people in Hawaii and damaged the West Coast, and a 1964 Alaskan earthquake that generated a tsunami and caused 12 deaths and 17 million dollars in damage in Crescent City. The earthquake that occurred in Japan in March 2011 initiated a tsunami that resulted in a run-up of 0.5 to 7.8 feet along the California coast with 2.2 feet of run-up observed at the San Francisco Marina.[36] There are no known recorded deaths from tsunami-related events in San Francisco County.

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[34] City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, Tsunami Response Annex, March 2011, p. 21. Available at http://www.sfdem.org/ftp/uploadedfiles/DEM/PlansReports/TsunamiAnnex-2008.pdf. Accessed on November 28, 2015.

[35] City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, Tsunami Response Annex, March 2011, p. 4. Available online at http://www.sfdem.org/ftp/uploadedfiles/DEM/PlansReports/TsunamiAnnex-2008.pdf. Accessed on November 28, 2015.

[36] R. Wilson, L. Dengler, J Borrero, C. Synaloakis, B. Jaffe, A Barberopoulou, L. Ewing, M. Legg, A. Ritchie, P. Lynette, A. Admire, T. McCrink, J. Falls, J. Treiman, M. Manson, C. Davenport, J. Lancaster, B. Olson, C. Pridmore, C. Real, K. Miller, J. Goltz, The Effect of the 2011 Tohoku Tsunami on the California Coastline. Available online at http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Documents/ssa_2011_california_tohoku_small.pdf. Accessed on November 28, 2015.

In 2009, the California Geological Survey, California Emergency Management Agency, and the Tsunami Research Center at the University of California completed the state's official tsunami inundation maps. As shown on **Figure 4.16-6**, portions of the Piers 94 and 96 staging areas are located in a potential tsunami inundation zone; neither the project site nor the staging areas at the Southeast Greenhouses or 1550 Evans Avenue are within the tsunami inundation zone.

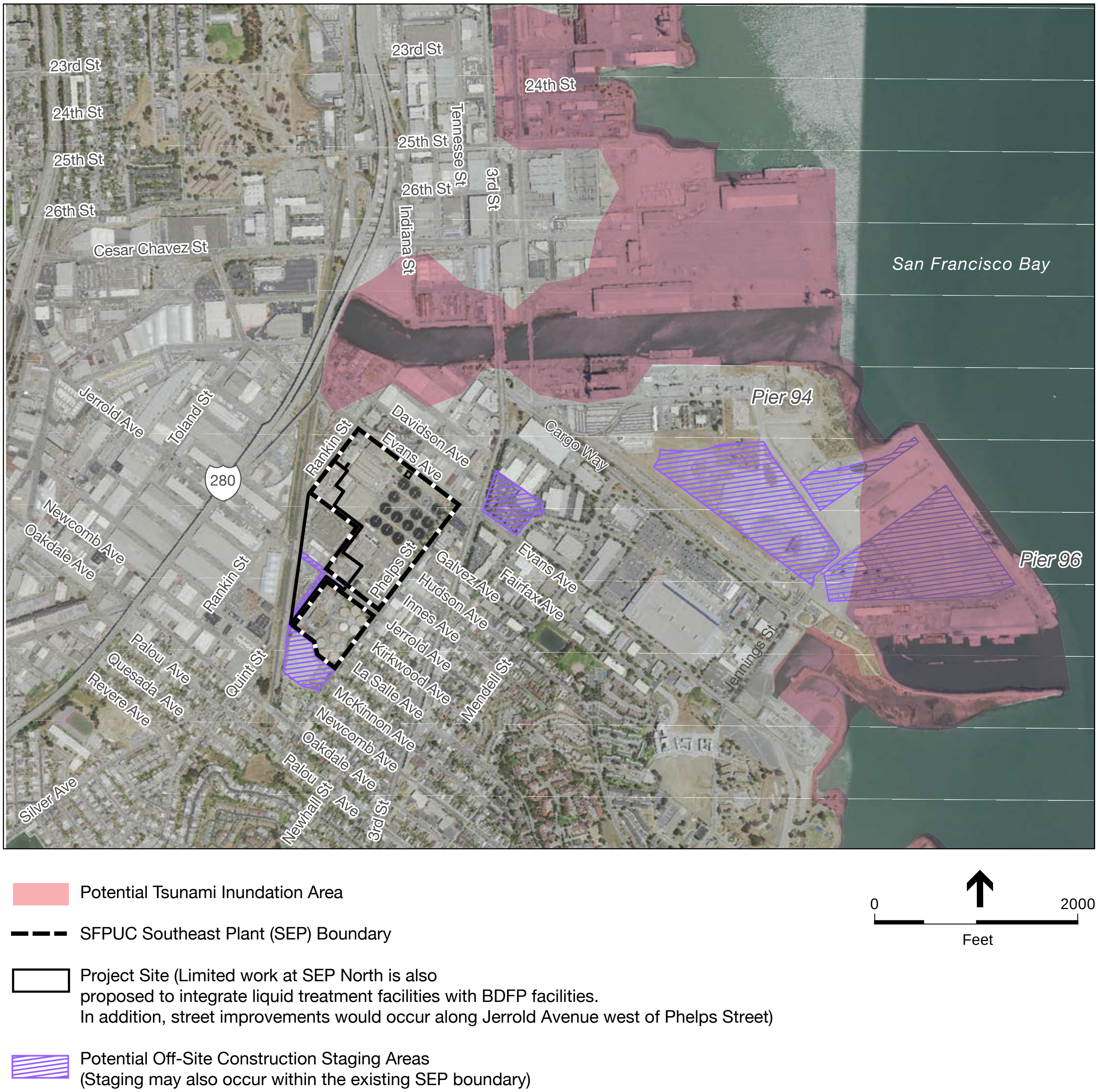
The potential tsunami and seiche wave height is approximately 3.8 feet at Piers 94 and 96, based on emergency response mapping conducted by the City.[37] When added to the Mean High Water level of -5.5 feet SFD (5.9 feet NAVD88) adjacent to the piers,[38] the maximum tsunami inundation elevation would be about -1.7 feet SFD (9.7 feet NAVD88) at Piers 94 and 96. Ground surface elevations within the potential inundation zones (mapped on a regional basis) range from about -3.4 to 0.7 feet SFD (8 to 12 feet NAVD 88), with some of the highest elevations occurring along the shoreline (which may protect the staging areas from tsunami inundation). Even if a tsunami were to encroach onto the staging areas, the maximum depth of inundation would be approximately 1.5 feet.

Tsunami Warning System

The National Oceanic and Atmospheric Administration (NOAA) operates the Pacific Tsunami Warning System with centers located in Hawaii and Alaska. These warning centers are linked to the Advanced National Seismic System that monitors earthquakes in the United States, to the international seismic monitoring systems, and to a system of tide gauges and buoys. The California Integrated Seismic Network also provides information regarding the magnitude and location of California earthquakes and a quick link to the NOAA/West Coast and Alaska Tsunami Warning Center. Based on the level of threat indicated by these systems, NOAA issues a Tsunami Advisory, Watch, or Warning.

The CCSF has prepared a Tsunami Response Annex as part of the City's Emergency Response Plan.[39] In accordance with this annex, the San Francisco Department of Emergency Management (DEM) would determine the appropriate plan of action based on the level of threat. In the event of a Tsunami Advisory or Watch, the DEM would issue a local Emergency Alert Message and evaluate the need to evacuate residents, schools, hotels, and people in the potential inundation zones, as well as the need to close the zoo, wharf, Marina area, and beaches. The DEM would also notify critical City departments and support agencies, and would monitor both the threat status and measured tide levels. If the Tsunami Watch is upgraded to a Tsunami Warning and measured tide levels confirm that the wave has the potential to create significant inundation in San Francisco, the Outdoor Public Warning System would be activated, including sirens, use of the public address system, and broadcast of public safety messages through the local media. The notification would

37 City and County of San Francisco, *Emergency Response Plan,Tsunami Response Annex, Attachment B*, September 2008.
38 SFPUC, *Climate Stressors and Impact: Bayside Sea Level Rise Mapping. Final Technical Memorandum.* June 2014.
39 City and County of San Francisco, Emergency Response Plan, an Element of the CCSF Emergency Management Program, Tsunami Response Annex, March 2011. Available online at http://www.sfdem.org/ftp/uploadedfiles/DEM/PlansReports/TsunamiAnnex-2008.pdf. Accessed on November 28, 2015.



SOURCE: National Agriculture Imagery Program, Imagery from 2014; California Emergency Management Agency, California Geological Survey, University of Southern California, Tsunami Inundation Map for Emergency Planning, San Francisco North Quadrangle/San Francisco South Quadrangle (SF Bay), June 15, 2009; ESA+Orion, data developed in 2016 for BDFP

SFPUC Biosolids Digester Facilities

Figure 4.16-6
Zones of Potential Tsunami Inundation

include instructions for walking to higher ground or evacuating and for obtaining basic services such as shelter, food, water, and medical services. The DEM would also coordinate response actions with appropriate local, state, and other emergency response agencies. Once the area is deemed safe for reentry, an all-clear public safety message would be broadcast.

The Tsunami Warning System takes an average of 7 to 10 minutes to identify a tsunami threat and communicate it to the media and state warning systems. The initial notification is based on seismic data. A tsunami's travel time is on the order of minutes (for local events) to hours (for distant events). During this time, the initial notification is normally updated once additional information is available, at least every 30 minutes. The status of an advisory, watch, or warning can be upgraded or downgraded or the impact area expanded based on the new information.

4.16.1.8 Groundwater Conditions

The project site is located within the boundaries of the Islais Valley Groundwater Basin. This groundwater basin has an area of approximately 9.2 square miles; it is bounded by San Bruno Mountain to the west and is separated from groundwater basins to the north and south by topographic highs in the underlying bedrock.[40] The entire eastern boundary of the Islais Valley Groundwater Basin is open to San Francisco Bay. Sources of recharge to this groundwater basin include rain water, irrigation return flows, and leakage from water and sewer pipes. The Water Quality Control Plan for the San Francisco Bay Basin identifies industrial process supply and industrial service supply as existing beneficial uses for the Islais Valley Groundwater Basin; municipal and domestic supply as well as agricultural supply are potential beneficial uses.[41]

Groundwater beneath the project site occurs in two zones.[42] The shallow groundwater is not confined and occurs within the artificial fill materials overlying young bay mud. As described in Section 4.15, Geology, Soils, and Paleontological Resources, shallow groundwater within the project site is encountered at approximately 8 to 12 feet below ground surface. The deeper groundwater occurs within the upper layered sediments located immediately beneath the young bay mud. Groundwater in this zone is confined by the overlying young bay mud and as a result, the groundwater is under pressure. While the upper layered sediments occur at depths of greater than 12 feet below ground surface beneath the site, groundwater levels rise to within 1 to 4 feet of the ground surface in monitoring wells completed in this zone as a result of the pressure.

Based on well records provided by the California Department of Water Resources, one well previously used for industrial purposes is located on Davidson Avenue approximately 800 feet north of the project site.[43] The current property manager at that location is not aware of any wells

40 California Department of Water Resources, *California's Groundwater, Bulletin 118*, February 27, 2004.
41 San Francisco Bay Regional Water Quality Control Board (RWQCB), *Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)*, March 20, 2015. Available online at http://www.swrcb.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf. Accessed on January 27, 2016.
42 Brown and Caldwell with CH2MHILL and Black & Veatch, Geotechnical Interpretive Report, February 2017.
43 California Department of Water Resources, *Well Completion Reports, Biosolids Digester Facilities, ½ Mile Radius of 1800-1801 Jerrold Avenue, San Francisco, CA, San Francisco County, Township 02S, Range 05W, Sections 22, 23, 26, 27,* December 16, 2015.

on the property.[44] If present, this well is not currently in use. There are no other identified wells that could withdraw groundwater from the shallow groundwater zone or the upper layered sediments within one-half mile of the project site.

4.16.2 Regulatory Framework

4.16.2.1 Federal Regulations

Clean Water Act – Water Quality

In 1972, the Clean Water Act (CWA) established the basic structure for regulating discharges of pollutants into the waters of the United States and gave the USEPA the authority to implement pollution control programs. The CWA sets water quality standards for contaminants in surface waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, to finance municipal wastewater treatment facilities, and to manage polluted runoff. The USEPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and programs in California, to the SWRCB and the nine Regional Water Quality Control Boards (RWQCBs). Water quality standards applicable to the project are listed in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan), discussed further below in Section 4.16.2.2, State Regulations.

Clean Water Act Section 303(d) and Total Maximum Daily Loads

In accordance with Section 303(d) of the CWA, states must present the USEPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. The CWA requires the development of total maximum daily loads (TMDLs) to improve water quality of impaired water bodies. Implementation of this program in the project area is conducted by the San Francisco Bay RWQCB and is discussed below in Section 4.16.2.2, State Regulations.

Clean Water Act Section 402

Section 402 of the CWA authorizes the USEPA to establish a nationwide surface water discharge permit program for municipal and industrial point sources. This program is known as the NPDES program. Under Section 402, the San Francisco Bay RWQCB has set standard conditions for each permittee in the Bay Area, including effluent limitation and monitoring programs. Discharges of stormwater and wastewater associated with the project would be subject to NPDES permits issued to the CCSF that are described below in Section 4.16.2.2, State Regulations.

Federal Combined Sewer Overflow Control Policy

In 1994, the USEPA adopted the Combined Sewer Overflow Control Policy (CSO Control Policy), which became part of the CWA in December 2000. This policy establishes a consistent national approach for controlling discharges from combined sewers to the nation's waters. Using the

[44] Response to San Francisco Public Utilities Commission Letter RE: Property at 1500 Davidson Avenue, San Francisco, CA 94124, September 20, 2016.

NPDES permit program, agencies operating combined sewer systems are the permittee and are required to implement the following nine minimum controls that constitute the technology-based requirements of the CWA and can reduce the frequency of combined sewer discharges (CSDs) and their effects on receiving water quality:

- Conduct proper operation and regular maintenance programs for the combined sewer system and CSD outfalls;
- Maximize the use of the collection system for storage;
- Review and modify pre-treatment programs to minimize the effect of non-domestic discharges to the collection system;
- Maximize flow to treatment plants;
- Prohibit CSDs during dry weather;
- Control solids and floatable materials in CSDs;
- Develop and implement a pollution prevention program focused on reducing the effect of CSDs on receiving waters;
- Notify the public of CSDs; and
- Monitor to effectively characterize CSD effects and the efficacy of CSD controls.

The City is currently implementing these controls as required by the CSO Control Policy and has also developed a long-term control plan to optimize operations of the City's combined sewer collection and treatment system and maximize pollutant removal during wet weather.

Consistent with the CSO Control Policy and the Long-Term Control Plan, the City captures and treats 100 percent of the combined wastewater and stormwater flow collected in the combined sewer system during precipitation events. Captured flows are directed first to the SEP and NPF for primary or secondary treatment and disinfection. Flows in excess of the capacity of these facilities are diverted to storage and transport boxes constructed around much of the city and receive "flow-through treatment" to remove settleable solids and floatable materials (the equivalent to primary treatment) prior to discharge to San Francisco Bay. The Long-Term Control Plan specifies operational parameters that must be met in each drainage basin before a CSD can occur and includes the following long-term average annual design goals for CSDs:

- Four CSD events along the North Shore
- Ten CSD events from the Central Basin (which includes the project site)
- One CSD event along the Southeast Sector

The City is currently meeting these long-term average design goals for the overall Bayside drainage basin.

4.16.2.2 State Regulations

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides for protection of the quality of waters of the State of California for use and enjoyment by the people of California. The act also establishes provisions for a statewide program for the control of water quality, recognizing that waters of the state are increasingly influenced by interbasin water development projects and other statewide considerations, and that factors such as precipitation, topography, population, recreation, agriculture, industry, and economic development vary regionally within the state. The statewide program for water quality control is therefore administered most effectively on a local level with statewide oversight. Within this framework, the act authorizes the SWRCB and RWQCBs to oversee the coordination and control of water quality within California.

San Francisco Bay Water Quality Control Plan (Basin Plan)

San Francisco Bay waters are under the jurisdiction of the San Francisco Bay RWQCB, which established regulatory standards and objectives for water quality in the Bay in the Water Quality Control Plan for the San Francisco Bay Basin, commonly referred to as the Basin Plan.[45] The Basin Plan identifies existing and potential beneficial uses for surface and ground waters and provides numerical and narrative water quality objectives designed to protect those uses. The preparation and adoption of water quality control plans is required by the California Water Code (Section 13240) and supported by the federal CWA. Because beneficial uses, together with their corresponding water quality objectives, can be defined pursuant to federal regulations as water quality standards, the Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control. Adoption or revision of surface water standards is subject to the approval of the USEPA.

The project site is located approximately 1,200 feet south of Islais Creek, which drains to Lower San Francisco Bay, and the Southeast Bay Outfall also drains to Lower San Francisco Bay. Lower San Francisco Bay extends from approximately the Bay Bridge on the north to the Dumbarton Bridge on the south. Identified beneficial uses for Lower San Francisco Bay are industrial service supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact recreation, non-contact water recreation, and navigation.

Impaired Water Bodies and Total Maximum Daily Loads

As described above, under Section 303(d) of the CWA, states must present the USEPA with a list of "impaired water bodies," defined as those water bodies that do not meet water quality standards. The San Francisco Bay RWQCB has listed Lower San Francisco Bay as an impaired

[45] San Francisco Bay Regional Water Quality Control Board (RWQCB), *Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)*, March 20, 2015. Available online at http://www.swrcb.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf. Accessed on January 27, 2016.

water body for chlordane, DDT, dieldrin, dioxins, furan compounds, mercury, polychlorinated biphenyls (PCBs), invasive species, and trash.[46]

As required by the CWA, the USEPA requires the development of TMDLs to improve water quality of impaired water bodies. The first step of the TMDL process is development of a TMDL report describing the water quality problem, detailing the pollutant sources, and outlining the solutions. An implementation plan, included in the TMDL report, describes how and when pollution prevention, control, or restoration activities will be accomplished and who will be responsible for these actions. The final step of the TMDL process is adopting and amending the Basin Plan to legally establish the TMDL and to specify regulatory requirements for compliance. As part of a Basin Plan amendment, waste load allocations are specified for entities that have permitted discharges.

TMDLs for PCBs and mercury in San Francisco Bay have been approved by the USEPA and officially incorporated into the Basin Plan. The San Francisco Bay RWQCB also adopted the San Francisco Bay Watershed Permit (Order No. R2-2012-0096), which implements the PCB and mercury TMDLs and includes specific effluent limitations and discharge specifications for mercury and PCBs in municipal and industrial wastewater discharges [47]

National Pollutant Discharge Elimination System Waste Discharge Regulations

As discussed in Section 4.16.2.1, Federal Regulations, Section 402 of the federal CWA established the NPDES program to protect water quality of receiving waters. The NPDES program requires all facilities that discharge pollutants into waters of the United States to obtain a permit. The permit provides two levels of control—technology-based limits and water quality-based limits—to control discharges of pollutants for the protection of water quality. Technology-based limits are based on the ability of dischargers in the same category to treat wastewater, while water quality-based limits are required if technology-based limits are not sufficient to protect the water body. Water quality-based effluent limitations required to meet water quality criteria in the receiving water are based on criteria specified in the National Toxics Rule, the California Toxics Rule, and the Basin Plan. NPDES permits must also incorporate TMDL waste load allocations when they are developed. In California, the SWRCB and the RWQCBs implement and enforce the NPDES program.

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[46] State Water Resources Control Board, 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) — Statewide. Available online at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml. Accessed on November 28, 2015; San Francisco Bay Regional Water Quality Control Board (RWQCB), *Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan)*, March 20, 2015. Available online at http://www.swrcb.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/docs/BP_all_chapters.pdf. Accessed on November 28, 2015.

[46] State Water Resources Control Board, 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) — Statewide. Available online at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml. Accessed on November 28, 2015.

[47] San Francisco Bay Regional Water Quality Control Board, *Waste Discharge Requirements for Mercury and PCBs from Municipal and Industrial Wastewater Discharges to San Francisco Bay, Order No. R2-2012-0096, NPDES No. CA0038849*, adopted December 12, 2012. Available online at http://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders/2012/R2-2012-0096.pdf. Accessed on November 28, 2015.

Construction General Stormwater Permit (SWRCB Order No. 2009-09-DWQ)

Stormwater discharges associated with construction activities that disturb more than one acre of land and could discharge to the Bay directly or via a separate stormwater system would be subject to the SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ as amended by Orders 2010-0014-DWQ and Order 2012-0006-DWQ (Construction General Stormwater Permit). Construction activities subject to this permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation. Under the Construction General Stormwater Permit, construction projects are characterized by the level of risk to water quality, which is determined by using a combination of the sediment risk of the project and the receiving water quality risk. Projects can be characterized as Level 1, Level 2, or Level 3, and the minimum best management practices (BMPs) and monitoring that must be implemented during construction are based on the risk level. The BMPs are designed to prevent pollutants from contacting stormwater and keep all products of erosion and stormwater pollutants from moving off-site into receiving waters. They are specified in a Stormwater Pollution Prevention Plan (SWPPP) that must be prepared by a Qualified SWPPP Developer and submitted to the San Francisco Bay RWQCB prior to beginning construction.

Sediment risk is determined based on the expected intensity of rainfall during the construction period, soil erodibility, and slope of the construction site. Therefore, the sediment risk for the project would depend on when the project is implemented; the project would have a higher sediment risk if it were implemented during the rainy season rather than the dry season. Receiving water risk is based on whether the project drains to a sediment-sensitive water body. A sediment-sensitive water body is one that appears on the most recent 303(d) list for water bodies as impaired for sediment, has a USEPA-approved TMDL implementation plan for sediment, or has the beneficial uses of cold freshwater habitat, fish migration, and fish spawning. Lower San Francisco Bay (the receiving water for stormwater runoff from Piers 94 and 96) is not considered a sediment-sensitive water body under the Construction General Stormwater Permit because it is not listed as impaired for sediment and does not have all three beneficial uses of cold freshwater habitat, fish migration, and fish spawning.

SEP, NPF, and Bayside Facilities NPDES Permit (RWQCB Order No. 2013-0029)

The City currently holds an NPDES permit (RWQCB Order No. R2-2013-0029), adopted by the San Francisco Bay RWQCB in August 2013, that covers the SEP, the NPF, and all of the Bayside wet weather facilities, including CSDs to the Bay.[48] The permit (referred to as the Bayside NPDES Permit) specifies discharge prohibitions, dry weather effluent limitations, wet weather effluent performance criteria, receiving water limitations, sludge management practices, and monitoring and reporting requirements. The permit prohibits overflows from the CSD structures during dry weather, and requires compliance with the nine minimum controls specified in the federal CSO Control Policy, described above, and the City's Long-Term Control Plan. Areas in the Bayside

48 Regional Water Quality Control Board, San Francisco Bay Region, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0037664, Order No.R2-2013-0029, for City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, Bayside Wet Weather Facilities and Wastewater Collection System, adopted August 14, 2013.

drainage basin that drain to the City's combined sewer system are subject to this permit. This permit is renewed every five years, and the renewed permit incorporates any changes in operation of the SEP and applicable water quality standards and effluent limitations.

The NPDES permit does not explicitly regulate the number, volume, duration, or frequency of CSDs from the combined sewer system, but instead requires that the system meets the long-term average annual design goals for CSDs from each subbasin. Under the Long-Term Control Plan, the City must optimize operations of the combined sewer system to minimize CSD frequency, magnitude, and duration and maximize pollutant removal during wet weather and must also provide treatment of all discharges from the combined sewer system, including CSDs. The NPDES permit also requires the City to monitor the water quality of CSDs and the efficacy of wet weather discharge controls. If the CSDs cause a violation of water quality standards in the receiving water, the City must evaluate its Long-Term Control Plan and combined sewer system operation to ensure compliance with water quality standards.

Waste Discharge Requirements for Nutrients from Municipal Wastewater Discharges

The San Francisco Bay RWQCB issued Order No. R2-2014-0014 (Waste Discharge Requirements for Nutrients From Municipal Wastewater Discharges to San Francisco Bay) on April 19, 2014. This order addresses nutrients in municipal wastewater discharges, including nitrogen and phosphorus, but does not contain specific discharge limitations. Rather, the order acknowledges that nutrients in municipal wastewater discharges to San Francisco Bay are of concern because increased nutrient concentrations can result in an increase of algal blooms and reduction in dissolved oxygen levels in San Francisco Bay. Order No. R2-2014-0014 requires the municipal wastewater dischargers, including the CCSF, to evaluate the potential for reducing nutrients in their discharges by optimizing their current wastewater treatment facilities, incorporating minor upgrades, using alternative discharge scenarios, or including sidestream treatment to reduce nitrogen and phosphorus levels in the sludge dewatering stream. These dischargers must also evaluate the level of nutrient removal achieved with planned treatment upgrades. A report documenting the final evaluation is due to the San Francisco Bay RWQCB by July 1, 2018. In addition, the municipal wastewater dischargers must conduct studies to address the potential adverse effects of nutrients on San Francisco Bay beneficial uses. The Bay Area Clean Water Agencies (BACWA) is coordinating efforts needed to comply with this permit.[49]

Small MS4 General Stormwater Permit (SWRCB Order No. 2013-001-DWQ)

On February 5, 2013, the SWRCB adopted the General Permit for Waste Discharge Requirements (WDRs) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Order No. 2013-001-DWQ (Small MS4 General Stormwater Permit). Areas that drain to separate stormwater collection systems in San Francisco, including the Port of San Francisco property at the Piers 94 and 96 staging areas, are subject to this permit. The Phase II General MS4 Permit identifies specific BMPs and management measures to be addressed and requires permittees to

[49] Bay Area Clean Water Agencies, Nutrients. Available online at http://bacwa.org/nutrients/. Accessed on August 9, 2016.

submit a guidance document to the SWRCB documenting their strategies for complying with permit requirements. The required program includes specific elements related to program management, education and outreach on stormwater impacts, public involvement/ participation, illicit discharge detection and elimination, construction site stormwater runoff and control, pollution prevention/good housekeeping for permittee operations, post-construction stormwater management for new development and redevelopment, water quality monitoring requirements, program effectiveness assessment, and annual reporting. For renewal permittees such as the Port, the guidance document must identify and describe BMPs included in their previous Stormwater Management Plan that may be more protective of water quality than the minimum requirements of the updated permit, and identify whether the permittee proposes to maintain, reduce, or cease implementation of the BMP.

4.16.2.3 Local Regulations

Stormwater and Wastewater Management

Stormwater Management Ordinance and Stormwater Management Requirements and Design Guidelines

Development projects that discharge stormwater to either the combined sewer system or a separate stormwater system must comply with the City's Stormwater Management Ordinance included in Article 4.2 of the San Francisco Public Works Code, Section 147, which was last updated on April 27, 2016. The SFPUC and the Port have developed the San Francisco Stormwater Management Requirements and Design Guidelines in accordance with the requirements of the Small MS4 General Stormwater Permit and Article 4.2, Section 147.

The Stormwater Management Requirements and Design Guidelines require compliance with specified stormwater management requirements and provide tools to help project developers achieve compliance with stormwater management requirements, including but not limited to:

- A set of stormwater BMP fact sheets
- A vegetation palette to assist in bioretention BMP-appropriate plant selection
- Sizing calculators to determine the required size of each BMP
- Illustrative examples of green infrastructure

In accordance with the San Francisco Stormwater Management Requirements and Design Guidelines, developers of projects that create and/or replace 5,000 square feet or more of impervious surfaces and discharge to the combined sewer system must implement BMPs to manage the flow rate and volume of stormwater going into the combined sewer system by achieving Leadership in Energy and Environmental Design (LEED®) Sustainable Sites Credit 6.1 (Stormwater Design: Quantity Control). This credit includes two different standards for post-construction stormwater controls depending on the amount of existing impervious surfaces. For covered projects with 50 percent or less existing impervious surfaces, the stormwater management approach must prevent the stormwater runoff flow rate and volume from exceeding existing conditions for the one- and two-year 24-hour design storm. For covered projects that include more than 50 percent existing impervious surfaces, the stormwater management approach must reduce the existing stormwater runoff flow rate and volume by 25 percent for a two-year 24-hour design storm. The Stormwater Management Requirements and Design Guidelines require low-impact development measures to reduce the rate of stormwater runoff and to reduce and delay the volumes of discharge entering the combined sewer system, thereby reducing the frequency of combined sewer overflows, minimizing flooding effects, and protecting water quality. Examples of BMPs that may be implemented include rainwater harvesting, rain gardens, green roofs, and permeable paving.

Developers of projects that discharge to a separate stormwater system must also implement BMPs to reduce the flow rate and volume and improve the quality of stormwater going into the separate stormwater system. In areas served by separate stormwater systems, the Stormwater Management Requirements and Design Guidelines specify different performance requirements according to the following project size thresholds:

- Small Project: 2,500 to 5,000 square feet of impervious surface created and/or replaced.
- Large Project: 5,000 square feet or more of impervious surface created and/or replaced.

Small Projects that discharge to a separate stormwater system must implement one or more site design measure(s) (e.g., tree planting and preservation, permeable pavement, green roofs, vegetated swales, rainwater harvesting, etc.). Large Projects must implement source controls and BMPs to meet performance requirements and must manage the 85th percentile, 24-hour storm.

The Stormwater Management Requirements and Design Guidelines also require developers to use certain preferred BMPs to the maximum extent feasible before considering use of remaining BMPs. The preferred BMP hierarchy prioritizes infiltration-based BMPs, rainwater harvesting, and vegetated roofs followed by lined bioretention (e.g., lined bioretention materials with an underdrain, commonly known as a "flow-through planter"). If none of these BMPs are feasible on site, projects may be able to incorporate high-rate filtration BMPs (e.g., tree-box filters and media filters) into their site design pending approval by the SFPUC and Port. As the implementing agency, the SFPUC inspects stormwater BMPs once they are constructed, and any issues noted by the inspection must be corrected. The owner is responsible for completing an annual self-certification inspection and must submit completed checklists and maintenance logs for the year to the SFPUC. In addition, the SFPUC inspects all stormwater BMPs every third year. Any issues identified by either inspection must be resolved. SFPUC projects that are required to implement the San Francisco Stormwater Management Requirements and Design Guidelines are also subject to building codes that include provisions for managing drainage for new construction. Specifically, Section 1101.1.1 of the San Francisco Plumbing Code and Section 1503.4 of the San Francisco Building Code allow roofs and other building areas to drain to locations other than the combined sewer.

Modified Compliance Program

The City has developed the Modified Compliance Program to allow development projects with proven site challenges and limitations to modify the standard stormwater performance measures set by the Stormwater Management Requirements and Design Guidelines. The Modified Compliance Program applies only to projects served by the combined sewer system.

In order to qualify for modified compliance, a site owner must submit a modified compliance application to the SFPUC that documents existing and proposed site features that limit infiltration such as high groundwater, shallow depth to bedrock, poorly infiltrating soils, steep slopes, contamination, and limited space for infiltration. The application also requires the applicant to estimate the non-potable demand for the project if the project is subject to the City's Recycled Water Ordinance. Based on this information, the SFPUC can decrease the amount the applicant must reduce the stormwater runoff volume; the required flow rate reduction is increased by the same percentage.

Construction-Related Stormwater Discharges

Discharges of construction-related stormwater runoff in San Francisco are subject to the construction site runoff requirements of Article 4.2 of the San Francisco Public Works Code, Section 146. In accordance with these requirements, any project that disturbs more than 5,000 square feet of land is subject to a Construction Site Runoff Control Permit. Covered land-disturbing activities include building demolition, clearing, grading, grubbing, filling, stockpiling, excavating, and transporting soil. The permit specifically requires easements for drainage facilities, provision of adequate dust controls in conformance with applicable air pollution laws and regulations, and improvement of any existing grading, ground surface, or site drainage to meet the requirements of Article 4.2. The application for the permit must also include an Erosion and Sediment Control Plan.

Under the Construction Site Runoff Control Permit, the site operator would be required to conduct daily inspections and maintenance of all erosion and sediment controls and must provide inspection and maintenance information to the SFPUC. The SFPUC would also conduct periodic inspections of the project site to ensure compliance with the plan. The project sponsor would be required to notify the SFPUC at least two days prior to the start of construction, completed installation of erosion and sediment control measures, completion of final grading, and project completion. At the SFPUC's discretion, sampling, metering, and monitoring may also be required.

Wastewater Discharges to the Combined Sewer System

Discharges of non-sewage wastewater to the combined sewer system are subject to the permit requirements specified in Article 4.1 of the San Francisco Public Works Code and supplemented by San Francisco Public Works Order No. 158170. The permit requires development and implementation of a pollution prevention program and specifies discharge limitations for specific chemical constituents as well as general conditions for the discharge. In addition, the discharge must meet the pre-treatment standards specified in Article 4.1, and the discharger must monitor the discharge quality for compliance with permit limitations. The discharger must also submit periodic reports to the SFPUC. The CCSF conducts periodic inspections to ensure compliance. Under Article 4.1, a Batch Wastewater Discharge Permit is required for non-routine and temporary discharges to the combined sewer system such as groundwater produced during construction-related dewatering.

San Francisco Reclaimed Water Use Ordinance

The CCSF Reclaimed Water Use Ordinance, which added Article 22 to the San Francisco Public Works Code, requires property owners to install recycled water systems in certain new construction, modified, or remodel projects. The goal of the ordinance is to maximize the use of recycled water. Buildings and facilities that are located within the designated recycled water use areas are required to use recycled water for all uses authorized by the State of California. Some of the common uses include irrigation, cooling, and/or toilet and urinal flushing. These systems must meet San Francisco Plumbing and Health Codes, which include specifications for pipe type, pipe separation, backflow prevention assemblies, water meters, and signage.

The requirements of the Recycled Water Ordinance apply to properties located within the designated recycled water use areas under the following circumstances:

- New construction or major alterations to a building totaling 40,000 square feet or more
- All subdivisions
- New and existing irrigated areas of 10,000 square feet or more

The project site is located within a designated recycled water use area,[50] and the proposed solids pre-treatment building would be greater than 40,000 square feet. Thus, the Reclaimed Water Use Ordinance would apply to the project. Accordingly, the SFPUC would design and construct all bathrooms in Biosolids Digester Facilities Project (BDFP) buildings with dual plumbing to allow for the use of recycled water (Title 22) if and when it becomes available in the future. Irrigation would be single-piped with a crossover/air gap connection such that recycled water could be used if and when available.

San Francisco Non-Potable Water Ordinance

In September 2012, the CCSF adopted the On-site Water Reuse for Commercial, Multi-Family, and Mixed Use Development Ordinance. Commonly known as the Non-Potable Water Ordinance, it added Article 12C to the San Francisco Health Code, allowing for the collection, treatment, and use of alternative water sources for non-potable applications. In October 2013, the CCSF amended the ordinance to allow district-scale water systems consisting of two or more buildings sharing non-potable water. The CCSF also amended the ordinance in July 2015, requiring new construction to use alternative water supplies for non-potable use. These amendments became effective on November 1, 2015, and specifically require that:

- All new buildings of 250,000 square feet or more of gross floor area (referred to as large development projects) located within the boundaries of San Francisco's designated recycled water use area be constructed, operated, and maintained using available alternative water sources for toilet and urinal flushing and irrigation;

[50] SFPUC, *Recycled Water Use*. Available online at http://sfwater.org/index.aspx?page=687. Accessed on January 26, 2016.

- All new buildings of 40,000 square feet or more of gross floor area (referred to as small development projects) in San Francisco prepare water budget calculations assessing the amount of rain water, gray water, and foundation water produced on-site and the planned toilet and urinal flushing and irrigation demands; and
- Subdivision approval requirements include compliance with Article 12C of the San Francisco Health Code.

The project site is located within a designated recycled water use area,[51] and the proposed Solids Pretreatment Facility total floor area would be greater than 40,000 square feet. Thus, this ordinance would apply to the BDFP.

San Francisco Floodplain Management

San Francisco's Floodplain Management requirements are specified in the San Francisco Administrative Code, Chapter 2A, Section XX. For buildings located within a flood-prone area, this code requires the following:

- The building must be adequately anchored to prevent flotation, collapse, or lateral movement.
- The building must be constructed with materials and utility equipment that are resistant to flood damage, and with methods and practices that minimize flood damage.
- Electrical, heating, ventilation, plumbing, and air conditioning equipment must be designed or located to prevent water from entering or accumulating within the components during flooding.
- All water supply and sanitary sewage systems must be designed to minimize or eliminate infiltration of flood waters into the system as well as discharges from the systems into floodwaters.

While portions of the Piers 94 and 96 staging areas are located within an existing flood zone, the project does not include any construction at the staging areas that would be subject to these requirements. The project site is not located in an existing flood zone, but portions could be subjected to flooding in the future as a result of sea level rise (refer to discussion in Section 4.16.1.5, Flooding as a Result of Sea Level Rise). Therefore, some of the project components would need to be resilient to future flood flows. While the floodplain management requirements do not directly apply, they help to inform measures considered suitable for flooding.

San Francisco Sea Level Rise Guidance

The CCSF has developed guidance for incorporating sea level rise into the planning of capital projects in San Francisco.[52] The guidance presents a framework for considering the effects of sea

[51] SFPUC, *Recycled Water Use*. Available online at http://sfwater.org/index.aspx?page=687. Accessed on January 26, 2016.

[52] City and County of San Francisco Sea Level Rise Committee, *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco: Assessing Vulnerability and Risk to Support Adaptation*, December 14, 2015. Available online at http://onesanfrancisco.org/wp-content/uploads/Guidance-for-Incorporating-Sea-Level-Rise-into-Capital-Planning1.pdf. Accessed on January 22, 2016.

level rise on capital projects implemented by the CCSF and for selecting appropriate adaptation. measures based on site-specific information. The planning process described in the guidance includes six primary steps:

- Review sea level rise science
- Assess vulnerability
- Assess risk
- Plan for adaptation
- Implement adaptation measures
- Monitor

As of December 2015, the CCSF considers the NRC Report as the best available science on sea level rise in California. However, the guidance acknowledges that the science of sea level rise is continually advancing, and projections of sea level rise may need to be updated at some point to reflect the most updated science. Sea level rise inundation maps prepared by the SFPUC, described in Section 4.16.1.5, Flooding as a Result of Sea Level Rise, are considered the most up-to-date maps and take into account both water level rises and the temporary effects of storm surge along the shoreline based on existing topography and conditions. The guidance also includes a checklist for evaluating the vulnerability of a project to sea level rise during the life of the project, including permanent sea level increases, as well as periodic water level increases that would occur with storm surge and waves.

For those projects that cost 5 million dollars or more that could be flooded during their lifespan, the guidance requires a vulnerability assessment based on the degree of flooding that could occur, the sensitivity of the project to sea level rise, and the adaptive capacity of the project site and design (the ability to adjust to sea level rise impacts without the need for substantial intervention or modification). The risk assessment takes into consideration the likelihood that the project could be adversely affected by sea level rise and the related consequences of flooding. An adaptation plan is required for projects that are found to be vulnerable to sea level rise and have a potential for substantial consequences. The plan should focus on those aspects of the project that have the greatest consequences if flooded. It should include clear accountability and trigger points for bringing adaptation strategies online as well as a well-defined process to ensure that milestones are being met and the latest science is being considered.

The CCSF sea level rise guidance document also acknowledges that there is some flexibility in how to plan for adaptations, and it may not always be feasible or cost-effective to design and build for long-term potential sea level rise scenarios that are of a highly uncertain nature, such as the upper end of the NRC Report range for the year 2100 (66 inches of sea level rise). In this case, a capital project constructed by the City could be designed and constructed to be resilient to the likely mid-century sea level rise (11 inches by 2050). Under this guidance, an alternative approach for a City capital project would be to build the project to be resilient to the *likely* sea level rise by 2100 (36 inches), while including adaptive capacity to be resilient to the *upper range* of sea level rise estimates for 2100 (66 inches).

Under CEQA and Chapter 31 of the San Francisco Administrative Code, the San Francisco Planning Department considers City projects that could be vulnerable to 100-year flooding in combination with sea level rise during their lifespan to have a significant risk related to flooding.

4.16.3 Impacts and Mitigation Measures

4.16.3.1 Significance Criteria

The project would have a significant impact related to hydrology and water quality if the project were to:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

Due to the nature of the project, there would be no impact related to the following topics for the reasons described below:

- ***Substantially alter the existing drainage pattern of the site or area.*** The project site, the Southeast Greenhouses site, and 1550 Evans Avenue are currently paved and would remain paved once construction is completed. There would be no grading or construction at the Southeast Greenhouses or 1550 Evans Avenue that would change the drainage patterns. Incorporation of stormwater management features at the project site in accordance with the

City's stormwater management requirements would ensure that drainage from the project site would not cause on- or off-site erosion, siltation, or flooding. The Port will be grading the Pier 94 Backlands to create a level area. Additional grading by the SFPUC, if any, would be minor and would not substantially alter the existing drainage pattern. Therefore, the two criteria related to alteration of existing drainage patterns and subsequent impacts (erosion, siltation, and flooding) are not applicable to the project and are not discussed further in this EIR.

- ***Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.*** During construction, the project would not change the amount of stormwater discharges to the combined sewer system. Any runoff would be managed in accordance with the required Construction Site Runoff Control Permit discussed in the analysis of water quality impacts under Impact HY-1. Therefore, during construction there would be no impact related to these topics. Impact HY-7 addresses stormwater impacts during project operation.

- ***Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map.*** The project site is not located in a 100-year flood zone[53] and would not include the construction of housing. While the near-shore areas of Piers 94 and 96 are located within a 100-year flood zone, these areas would be used for construction staging only and no housing would be constructed. Therefore, the criterion related to the placement of housing within a 100-year flood hazard zone is not applicable to the project and is not discussed further in this EIR.

- ***Expose people or structures to a significant risk of loss, injury, or death involving flooding due to failure of a levee or failure of a dam.*** The project is not in an area where there are levees or dams and is not located in a dam inundation zone as shown on Map 6 of the Community Safety Element of the *San Francisco General Plan*.[54] Therefore, these risks are not applicable to the project and are not discussed further in this EIR.

- ***Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.*** The project is not located near geologic conditions that would generate mudflow. As shown on Figure 4.16-6, the project site is not located within the potential tsunami inundation zone shown on Map 5 of the Community Safety Element of the *San Francisco General Plan*[55] or on statewide maps prepared by the California Emergency Management Agency.[56] While the Piers 94 and 96 staging areas are located within a potential tsunami inundation zone, they would not be used during operation of the project. Therefore, there would be no impact related to this topic resulting from operation of the BDFP. Impact HY-4 addresses tsunami and seiche inundation during construction.

[53] City and County of San Francisco, San Francisco Interim Floodplain Map, East, July 2008.
[54] City and County of San Francisco, *San Francisco General Plan*, Community Safety, an Element of the General Plan of the General Plan of the City and County of San Francisco, October 2012.
[55] City and County of San Francisco, *San Francisco General Plan*, Community Safety, an Element of the General Plan of the General Plan of the City and County of San Francisco, October 2012.
[56] California Emergency Management Agency, California Geological Survey, University of Southern California, Tsunami Inundation Map for Emergency Planning, San Francisco North Quadrangle/San Francisco South Quadrangle (SF Bay), June 15, 2009.

4.16.3.2 Approach to Analysis

Project Impacts

Construction Impacts

Construction-related effects on hydrology and water quality are direct or indirect impacts that could occur during construction, including construction and demolition activities as well as groundwater dewatering. The impact analysis considers whether compliance with regulatory requirements for these activities would ensure that these water quality-related impacts are less than significant during construction.

The analysis of flooding (including existing 100-year flooding and flooding associated with sea level rise) considers whether the project site or staging areas are located within a potential flood zone and whether construction-related activities would impede or redirect flood flows. Impacts related to inundation by tsunami are considered significant if the project site or staging areas are located within a potential tsunami inundation zone and whether construction-related activities would expose people or structures to a significant risk of loss, injury, or death.

Operational Impacts

Operational impacts are associated with long-term operation of the proposed facilities following completion of construction, including potential changes in SEP effluent quality, changes in stormwater runoff, depletion of groundwater resources, and flooding as a result of sea level rise. Changes in effluent quality from the SEP are considered significant if the changes would result in an exceedance of Basin Plan water quality objectives for San Francisco Bay or a violation of NPDES permit limitations for the SEP, or would otherwise degrade water quality. Impacts related to changes in stormwater runoff are considered significant if project-related runoff would exceed the capacity of the existing stormwater infrastructure at the SEP or provide a substantial additional source of stormwater pollutants. This impact is considered less than significant if the project-related stormwater flows would be within the capacity of the existing infrastructure and would not exceed waste discharge requirements. Depletion of groundwater resources is considered significant if the project would interfere with groundwater recharge, or withdraw groundwater in amounts that would substantially reduce the production rate of nearby groundwater wells.

Regarding operational flooding impacts, the California Supreme Court has determined that CEQA does not generally require lead agencies to consider how existing hazards or conditions might affect a project's users or residents, except where the project would exacerbate an existing environmental hazard.[57] Accordingly, hazards resulting from a project that places development in an existing or future flood hazard area are not considered impacts under CEQA unless the project would exacerbate the flood hazard or result in secondary water quality impacts as a result of flooding (e.g., disruption of wastewater treatment processes or a release of materials that could affect water quality). Thus, the analysis below evaluates whether the project would exacerbate existing or future flood hazards in the project area (including existing 100-year flooding and flooding associated with

[57] *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369.

sea level rise) and result in a substantial risk of loss, injury, or death or secondary water quality impacts. The impact is considered significant if the project could exacerbate existing or future flood hazards in the project area by increasing the frequency or severity of flooding or causing flooding to occur in an area that would not be subject to flooding without the project.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes probable future projects in the vicinity of the project that could contribute to a cumulative impact. Refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects near the BDFP. The cumulative impact analysis related to hydrology and water quality uses a list-based approach to analyze the effects of the project in combination with past, present, and probable future projects in the immediate vicinity. The cumulative impact analysis assumes that construction and operation of other projects in the geographical area would be subject to the same regulatory requirements as the project. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's contribution to the cumulative impact would be significant (i.e., cumulatively considerable). Both conditions must apply in order for a project’s contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.16.3.3 Impact Evaluation

Construction Impacts

Impact HY-1: Construction of the project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant)

Water Quality Effects of Construction-Related Stormwater Runoff

Without proper controls, demolition of existing facilities, grading, and earthmoving for construction of utilities and infrastructure and construction of new facilities would expose soil during construction and could result in erosion and excess sediment carried in stormwater runoff. Stormwater runoff from temporary on-site use and storage of vehicles, fuels, wastes, and building materials during construction could also carry pollutants if these materials were improperly handled or stored.

However, the federal Clean Water Act effectively prohibits discharges of stormwater from construction projects unless the discharge is in compliance with an NPDES permit. During construction, stormwater from the project site and the staging areas at the Southeast Greenhouses, 1550 Evans Avenue, Jerrold Avenue, and Quint Street would drain to the City’s combined sewer system. Stormwater from the Piers 94 and 96 and Pier 94 Backlands staging areas would drain to a separate stormwater system under jurisdiction of the Port. Implementation of regulatory requirements relating to stormwater discharges to the combined sewer system and separate stormwater system would ensure that the water quality effects of construction-related stormwater runoff would be less than significant, as discussed below.

Construction-Related Stormwater Discharges to the Combined Sewer System

Construction and demolition activities at the project site, adjacent staging areas, and staging areas at the 1550 Evans Avenue and Southeast Greenhouses sites, would be subject to the Construction Site Runoff requirements of Article 4.2 of the San Francisco Public Works Code, Section 146 (refer to Section 4.16.2.3, Local Regulations). Proposed construction activities that are covered under this regulation include site grading; excavation for construction of utilities, roadways, other infrastructure, and buildings; and demolition of existing buildings.

Pursuant to this regulation, the SFPUC or its contractor must obtain a Construction Site Runoff Control Permit. This permit is required for any project that includes any land-disturbing activities such as building demolition, clearing, grading, grubbing, filling, stockpiling, excavating, and transporting soil. The permit application must include a site-specific Erosion and Sediment Control Plan that provides a vicinity map showing the location of the site in relationship to the surrounding area's water courses, water bodies, and other significant geographic features; a site survey; suitable contours for the existing and proposed topography, area drainage, proposed construction and sequencing, and drainage channels; proposed erosion and sediment controls; dewatering controls where applicable; soil stabilization measures where applicable; maintenance controls; sampling, monitoring, and reporting schedules; and any other information deemed necessary by the SFPUC as the administering agency. The requirements also specify that the contractor must provide adequate dust controls in conformance with applicable air pollution laws and regulations (including Article 22B of the San Francisco Health Code, described in Section 4.17, Hazards and Hazardous Materials, and Section 4.8, Air Quality, of this EIR). Improvements to any existing grading, ground surface, or site drainage must also meet the requirements of Article 4.2 for new grading, drainage, and erosion control.

Under the Construction Site Runoff Control Permit requirements, the construction contractor would be required to conduct daily inspections and maintenance of all erosion and sediment controls and must provide inspection and maintenance information to the SFPUC as the administering agency. The SFPUC would also conduct periodic inspections of the project site to ensure compliance with the plan. The construction contractor would be required to notify the SFPUC as the administering agency at least two days prior to the start of construction, completed installation of erosion and sediment control measures, completion of final grading, and project completion. As the administering agency, the SFPUC could also require sampling, metering, and monitoring at its discretion.

During construction, the SFPUC or its contractors could store hazardous materials and fuels at the on-site staging areas within Quint Street and Jerrold Avenue and off-site staging areas at the Southeast Greenhouses site or 1550 Evans Avenue site. The Erosion and Sediment Control Plan for construction activities at these sites would include the appropriate BMPs to prevent stormwater contact with these materials and limit the potential for a release of hazardous materials that could affect water quality.

Implementation of the Construction Site Runoff Control Permit requirements of Article 4.2 of the San Francisco Public Works Code, Section 146, would ensure that water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of construction-related stormwater runoff from the project site and staging areas at 1550 Evans Avenue and the Southeast Greenhouses site would be less than significant.

Construction-Related Stormwater Discharges to Separate Stormwater System or to Bay

Stormwater from Piers 94 and 96 and the Pier 94 Backlands drains to separate stormwater systems that are under the jurisdiction of the Port and discharge to Lower San Francisco Bay. Up to 12 acres would be used for staging in these areas. Therefore, grading and excavation for new temporary utilities for the staging areas at these piers would be also be subject to both Article 4.2 of the San Francisco Public Works Code (Section 146) and the SWRCB's Construction General Permit. Article 4.2 requires implementation of an Erosion and Sediment Control Plan for projects that disturb more than 5,000 square feet of land, and the Construction General Stormwater Permit requires implementation of a Stormwater Pollution Prevention Plan (SWPPP) for projects that disturb one or more acres of land. Article 4.2 provides that projects subject to both regulatory requirements may prepare a SWPPP in lieu of the Erosion and Sediment Control Plan.

The Construction General Stormwater Permit characterizes construction activities by the level of risk to water quality. This is determined using a combination of the sediment risk of the project and the receiving water quality risk. Projects can be characterized as Risk Level 1, Risk Level 2, or Risk Level 3, with Risk Level 1 representing the lowest risk to receiving water quality. The minimum BMPs and monitoring that must be implemented during construction are based on the risk level. The BMPs are designed to prevent pollutants from coming in contact with stormwater and to keep any erosion and stormwater pollutants from moving off-site into receiving waters. The BMPs are specified in a SWPPP that must be prepared by a Qualified SWPPP Developer and submitted to the San Francisco Bay RWQCB before construction begins. Construction activities under the project would not be characterized as Risk Level 3, the highest risk level, because Lower San Francisco Bay is not considered a sediment-sensitive water body under the Construction General Stormwater Permit, as described in Section 4.16.2.2, State Regulations. Characterization as a Risk Level 1 or 2 site would depend on the sediment risk of construction activities. Sediment risk is based on the timing of construction, including the potential for rainfall to occur, as well as other project-related information such as the slope of the site and soil erodibility.

For Risk Level 1 sites, the Construction General Stormwater Permit specifies minimum BMPs to be implemented that address good housekeeping practices (including those for managing hazardous materials used during construction); non-stormwater management, erosion, and sediment control; and run-on and runoff control. A qualified professional must inspect the required BMPs weekly when there is no rain and daily during a qualifying rainstorm. For construction activities characterized as Risk Level 2, the minimum requirements identified for Risk Level 1 apply, as do some more stringent requirements. For instance, for Risk Level 2 construction activities, erosion controls must be implemented in conjunction with sediment controls in active construction areas, and linear sediment controls such as silt fences, gravel bag berms, or fiber rolls must be used along slopes. In addition, a Qualified SWPPP Developer must prepare a rain event action plan for Risk Level 2 construction activities. This plan would identify the designated site stormwater manager, the provider of erosion and sediment controls, and the stormwater sampling agent, as well as the types of construction activities implemented at the site during all construction phases. The plan would include suggested actions for each construction phase.

Compliance with the Construction General Stormwater Permit, including the associated permit enforcement requirements, would ensure that water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of construction-related stormwater runoff to the Bay via the separate stormwater systems at Piers 94 and 96, would be less than significant.

Water Quality Effects of Groundwater Dewatering

As noted above in Section 4.16.1.8, above, shallow groundwater levels at the project site are approximately 8 to 12 feet below ground surface.[58] In addition, confined groundwater occurs within the upper layered sediments encountered below the young bay mud. While the upper layered sediments occur at depths of greater than 12 feet below ground surface at the site, groundwater levels rise to within 1 to 4 feet of the ground surface in monitoring wells completed in this zone as a result of pressure on the confined groundwater.

Most of the excavations at the project site would be completed within the artificial fill materials and young bay mud that underlie the project site. These excavations would be completed below the shallow water table. Shoring systems used in the excavations would limit the amount of groundwater flow into the excavations. Alternatively, the sidewalls of the excavations could be sloped to ensure slope stability which would allow more groundwater flow into the excavation. In either case active dewatering systems such as use of a sump pump may be required to maintain a dry working space in these excavations, but only limited dewatering would be required to maintain a dry working area within these shallower excavations. Deeper excavations (e.g., for the Anaerobic Digesters) would extend into the upper-layered sediments. As discussed in Section 4.16,1.8, groundwater within this geologic unit occurs under pressure. Therefore, these deeper excavations could require more extensive groundwater dewatering to provide a stable and dry work area and to reduce groundwater within the excavations. The volume of groundwater that could be produced during dewatering is not currently known.

Groundwater from dewatering activities could contain contaminants related to past site activities, as discussed in Section 4.17, Hazards and Hazardous Materials, as well as sediment and suspended solids. Discharge of groundwater produced during construction-related dewatering would be subject to a Batch Wastewater Discharge Permit issued in accordance with Article 4.1 of the Public Works Code, as supplemented by Order No. 158170, which regulates the quantity and quality of discharges to the combined sewer system. Accordingly, groundwater produced during the limited dewatering would be pumped to baker tanks or other containment, tested, and treated to ensure compliance with the discharge limitations of Article 4.1 of the Public Works Code and Order No. 158170. Treatment could include methods such as using settling tanks to remove sediments,

[58] Brown and Caldwell with CH2MHILL and Black & Veatch, Geotechnical Interpretive Report, February 2017.

filters to remove suspended solids, and other methods to meet chemical-specific discharge limitations. The chemical-specific treatment method used would depend on the chemicals that exceed the specified discharge limitation but could include methods such as filtration or activated carbon treatment to reduce chemical concentrations as necessary to meet permit requirements prior to discharge. Installation of meters to measure the volume of the discharge may also be required.

With discharge to the combined sewer system in accordance with regulatory requirements, water quality impacts related to a violation of water quality standards or degradation of water quality due to discharge of groundwater produced during construction-related dewatering would be less than significant**.**

Summary of Impact HY-1

Impact HY-1 describes potential water quality impacts related to stormwater runoff during construction and discharge of groundwater produced during dewatering in order to provide safe and dry work area in project excavations. These impacts would be ***less than significant*** because construction would be subject to the regulatory requirements specified in Articles 4.1 and 4.2, Section 146, of the San Francisco Public Works Code as well as the SWRCB's Construction General Permit, and implementation of the required control measures would adequately protect water quality. No mitigation is required.

Mitigation: None required.

Impact HY-2: Construction of the project would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. (Less than Significant)

As described in Impact HY-1, shallow groundwater at the project site occurs within the artificial fill materials overlying the young bay mud. Shallow groundwater levels at the project site are about 8 to 12 feet below ground surface.[59] In addition, confined groundwater occurs within the upper layered sediments encountered below the young bay mud. While the upper layered sediments occur at depths of greater than 12 feet below ground surface beneath the site, groundwater levels rise to within 1 to 4 feet of the ground surface in monitoring wells completed in this zone.

Most of the excavations at the project site would be completed within the artificial fill materials and young bay mud that underlie the project site. These excavations would be completed below the shallow water table. Active dewatering systems such as use of a sump pump may be required to maintain a dry working space in these excavations, but only limited dewatering would be required within these shallow excavations. Based on the limited dewatering required and because this dewatering would be conducted only during construction, this dewatering would not result in depletion of groundwater resources. Further, as described in Section 4.16.1.8, there are no wells that utilize groundwater from the shallow zone within 1/2 mile of the project site.

[59] Brown and Caldwell with CH2MHILL and Black & Veatch, Geotechnical Interpretive Report, February 2017.

Deeper excavations (e.g., for the Anaerobic Digesters) would extend into the upper-layered sediments, and groundwater within this geologic unit occurs under pressure. Therefore, these deeper excavations could require more extensive groundwater dewatering to provide a stable and dry work area and to reduce groundwater within the excavations. The volume of groundwater that could be produced during dewatering is not currently known.

Pumping of groundwater causes groundwater levels to decline in the area around the excavation which could interfere with the operation of nearby wells if present. However, as described in Section 4.16.1.8, there are no wells that utilize groundwater from the upper layered sediments within 1/2 mile of the project site. Because groundwater from the upper layered sediments 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 from the upper layered sediments would not result in groundwater depletion.

Construction activities would not result in an increase of impervious surfaces. Therefore, the project would not interfere with groundwater recharge, and impacts related to groundwater depletion and interference with groundwater recharge would be ***less than significant.***

Mitigation: None required.

Impact HY-3: Construction of the project would not place structures within a 100-year flood zone or expose people or structures to a significant risk of loss, injury, or death involving flooding under current conditions or future conditions resulting from sea level rise. (Less than Significant)

Project Site and Adjacent Staging Areas

The project site and adjacent staging areas (at the Southeast Greenhouses site and 1550 Evans Avenue) are not located within an existing 100-year flood zone, as shown on Figure 4.16-2. Therefore, there would be no impact related to flooding risk during construction within these areas. Impact HY-8 addresses impacts related to future flooding resulting from sea level rise that would occur during operation of the BDFP.

Staging Areas on Port Property

The Pier 94 Backlands is not within an existing 100-year flood zone and would not be subject to future flooding as a result of sea level rise as shown on Figures 4.16-2 through 4.16-5.

The near-shore areas of the Piers 94 and 96 staging areas are located within an existing 100-year flood zone, as shown on Figure 4.16-2.[60] However, these areas would be used for construction staging only and no employees would permanently work in these areas. The project would not

[60] City and County of San Francisco, San Francisco Interim Floodplain Map, SE San Francisco, November 12, 2015.

include the construction of any structures in the flood zone that could impede or redirect flood flows (or, consequently, exacerbate flood hazards).

Based on sea level rise mapping conducted by the SFPUC, a small area in the southern portion of the Pier 96 staging area could be permanently inundated by 2050, with a larger area inundated by 2100. Other portions of the Piers 94 and 96 staging areas could also temporarily flood as a result of 100-year storm surge under both scenarios as shown on Figures 4.16-3 and 4.16-4, and as a result of 100-year storm surge associated with the upper range of sea level rise estimated by the NRC as indicated on Figure 4.16-5. However, construction activities would be completed by 2023. If inundation occurred prior to this time, the SFPUC could move staging activities out of the inundation area to avoid adverse effects related to flooding.

Based on the above analysis, during construction, the project would not result in a significant risk due to flooding nor exacerbate flood hazards because the staging activities at Piers 94 and 96 would not include the placement of structures within the existing 100-year flood zone and the project would not expose structures or people to a significant risk of loss, injury, or death involving flooding. This impact would be ***less than significant*** and no mitigation is required.

Mitigation: None required.

Impact HY-4: Construction of the project would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche or tsunami. (Less than Significant)

Project Site and Adjacent Staging Areas

As shown on Figure 4.16-6, the project site and adjacent staging areas (at the Southeast Greenhouses site and 1550 Evans Avenue) are not located within the potential tsunami inundation zone shown on Map 5 of the Community Safety Element of the *San Francisco General Plan*[61] or on statewide maps prepared by the California Emergency Management Agency.[62] Therefore, there would no impact related to the potential of seiche or tsunami inundation during construction at the project site and adjacent staging areas.

Staging Areas on Port Property

A large part of the Piers 94 and 96 staging areas would be located within a potential tsunami inundation zone as shown on Figure 4.16-6. Based on the estimated tsunami height of about -1.7 feet SFD (9.7 feet NAVD88) at Piers 94 and 96, the maximum potential depth of inundation could be about 1.5 feet as described in Section 4.16.1.7, Tsunami and Seiche. However, other than temporary trailers with restroom facilities, the project would not include the construction of any structures in this area that could be damaged in the event of a tsunami.

[61] City and County of San Francisco, *San Francisco General Plan*, Community Safety, an Element of the General Plan of the General Plan of the City and County of San Francisco, October 2012.

[62] California Emergency Management Agency, California Geological Survey, University of Southern California, Tsunami Inundation Map for Emergency Planning, San Francisco North Quadrangle/San Francisco South Quadrangle (SF Bay), June 15, 2009.

Workers would only intermittently occupy the area before and after their work shifts. In the event that the National Warning System issues a tsunami warning, the CCSF would initiate its outdoor warning system and issue emergency instructions should the San Francisco waterfront be threatened. Use of this system would allow adequate warning time to avoid the area in the event of a tsunami and for evacuation of the area should workers be present when the warning is issued.

While the SFPUC could store construction-related hazardous materials such as fuels, lubricants, paints, and adhesives at the Piers 94 and 96 staging areas, the Port would require implementation of an operations plan as part of their lease, subject to approval by the Port, that addresses the safe storage of hazardous materials. This plan would specify BMPs for hazardous materials storage to reduce the potential for a release of hazardous materials in the event of a tsunami and spill response procedures to address a release of hazardous materials if one were to occur. Implementation of appropriate BMPs would ensure that adverse water quality effects would not occur in the event of a tsunami during the construction period.

The Pier 94 Backlands is not located within a potential tsunami inundation zone.

Based on this analysis, the project would not expose structures or people to a substantial risk of loss, injury, or death involving inundation by seiche or tsunami, and this impact would be ***less than significant*** for the construction staging areas on Port property.

Mitigation: None required.

Operational Impacts

Impact HY-5: Operation of the project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant)

The project would replace and relocate the solids treatment facilities at the SEP with modern technologies and facilities designed to produce Class A biosolids, which have no detectable pathogens. The proposed operational improvements would modify the existing biosolids treatment process to add a thermal hydrolysis process (THP), which includes heating undigested wastewater solids with steam under pressure and rapidly depressurizing them to make them more biodegradable. After pre-treatment and digestion, the solids would be dewatered prior to loadout, and the dewatering return stream (i.e., the reject water from the dewatering process) would be returned to the existing SEP liquid processing facilities. These liquid processing facilities ultimately discharge secondary-treated effluent from the SEP to Lower San Francisco Bay via the Southeast Bay Outfall during dry weather. While the proposed change in solids treatment process under the BDFP would not substantially increase the total load of any constituents, it could potentially increase the concentration of certain constituents in the plant's final effluent if the concentration in the dewatering return stream is sufficiently high and if those constituents are not otherwise removed by primary and/or secondary liquid treatment processes used at the SEP. The constituents of particular concern are ammonia and nitrogen because they are present in the wastewater solids, and during the solids treatment process they are concentrated in the dewatering return stream. In addition, the SEP primary and secondary liquid treatment processes are not designed to remove or transform ammonia or remove nitrogen. These constituents could substantially degrade water quality at high concentrations.

Water Quality Objectives and Effluent Limitations

The Basin Plan includes the following water quality objectives for un-ionized ammonia[63] in Lower San Francisco Bay:

- An annual median of 0.025 milligram per liter (mg/L) as nitrogen; and
- A maximum of 0.4 mg/L as nitrogen.

The effluent limitations of the Bayside NPDES Permit consider the amount of dilution the effluent will receive when discharged to Lower San Francisco Bay and are established to ensure that effluent discharges will not cause the above water quality objectives to be exceeded in the Bay. Accordingly, the dry weather ammonia effluent limitations of the Bayside NPDES Permit are an average monthly effluent limit (AMEL) of 190 mg/L and a maximum daily effluent limit (MDEL) of 290 mg/L. During wet weather, the concentrations of ammonia would be expected to be much less because of the increased volumes of stormwater in the effluent.

The SFPUC Bayside NPDES Permit does not include any effluent limitations specifically for total nitrogen. However, most nitrogen in the SEP effluent occurs in the form of ammonia. Any increase in concentration of total ammonia results in a corresponding increase in total nitrogen concentration. Increased nitrogen concentrations in wastewater effluents have the potential to increase algal blooms and consequently decrease dissolved oxygen concentrations in San Francisco Bay. These changes can affect habitat for several estuarine species, including clams, which are filter feeders.

Summary of Water Quality Analysis

RMC Water and Environment (RMC) conducted a water quality analysis for the proposed solids treatment processes, included in this EIR as Appendix HYD and referred to below as the Water Quality Analysis. This analysis determined that the project's new THP process could increase the concentrations of both total ammonia and total nitrogen in the dewatering return stream relative to the existing digestion process.[64] The increase in total nitrogen concentrations is due almost entirely to the increase in ammonia concentration. While the dewatering return stream is typically less than 1 percent of raw plant flow (during dry weather), an increased concentration of ammonia or nitrogen in the dewatering return stream could result in an increase in the total ammonia or total nitrogen concentration in the final SEP effluent if concentrations in the dewatering return stream are very high. The water quality analysis assessed whether the

63 Ammonia is a nutrient that contains nitrogen and hydrogen. Its chemical formula is NH_3 in the un-ionized state and NH_4^+ in the ionized form. Total ammonia is the sum of both un-ionized and ionized ammonia. Un-ionized ammonia is more toxic to fish and other aquatic life than ionized ammonia.

64 RMC Water and Environment, Water Quality Analysis for the SEP Biosolids Digester Facilities Project, March 24, 2016.

increased ammonia and total nitrogen concentrations in the dewatering return stream would result in a violation of the Bayside NPDES Permit or otherwise substantially degrade water quality. The study also concluded that no other constituents in the dewatering stream would have a potential to exceed the Bayside NPDES Permit effluent limitations or water quality objectives for Lower San Francisco Bay, or otherwise substantially degrade water quality; for this reason, the analysis summarized below focuses on ammonia and nitrogen.

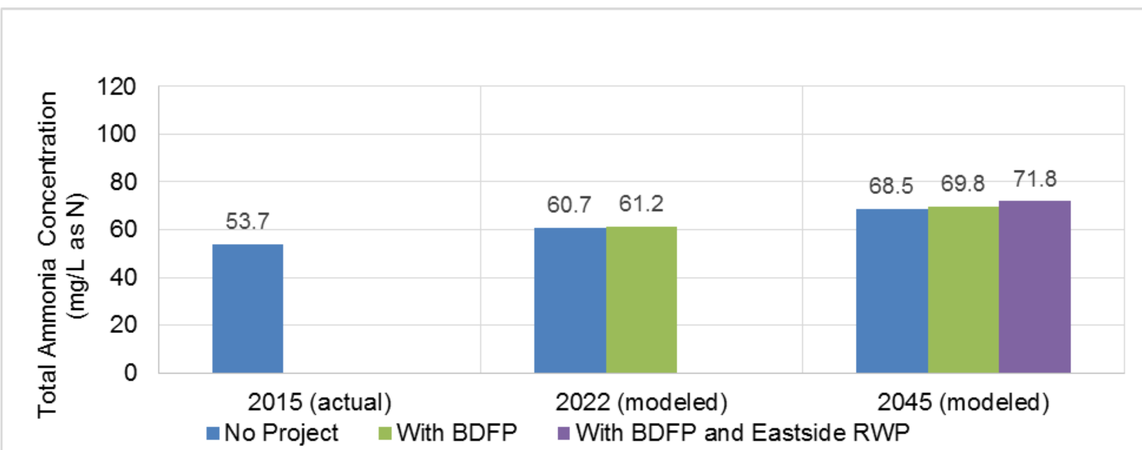
The Water Quality Analysis reported both the average and 95th percentile concentrations of ammonia and total nitrogen concentrations in the analysis. While the average is commonly used, the 95th percentile is a more conservative estimate of increases in concentration because it represents the value below which 95 percent of all concentrations would fall (with only 5 percent of the concentrations exceeding the stated value). The 95th percentile concentration is greater than the average and, for the purposes of this EIR, the discussion below conservatively analyzes impacts associated with the 95th percentile concentrations reported in the Water Quality Analysis.

The Water Quality Analysis also analyzed measured concentrations of ammonia and nitrogen in the SEP effluent between 2008 and 2015 to evaluate existing effluent quality. Between 2008 and 2015, the concentrations of both ammonia and nitrogen have shown a gradual increase due to population growth and water conservation. Despite this increase, in 2015 the 95th percentile concentration of total ammonia in the SEP effluent was 53.7 mg/L, well below the NPDES most stringent effluent limitation of 190 mg/L. The 95th percentile concentration of nitrogen in the SEP effluent in 2015 was 65.1 mg/L. The increasing trend in ammonia and nitrogen concentrations in the SEP effluent is expected to continue, whether or not the BDFP is implemented, because the volume of solids discharged to the combined sewer system has been increasing and will continue to increase over time as a result of population growth in San Francisco. At the same time, ongoing water conservation efforts in San Francisco are lowering the per capita water use for purposes such as toilet flushing, bathing, dishwashing, and clothes washing, resulting in a corresponding reduction in the volume of wastewater discharges from these activities. As a result, the increase in solids and reduction in flows have increased total ammonia and nitrogen concentrations in the final SEP effluent over time, and this increasing trend is expected to continue, regardless of project implementation.

The study presents the results of modeling conducted by the BDFP Consultant Team for the SFPUC to estimate future ammonia and nitrogen concentrations in the SEP effluent with and without the project. The estimates were completed using the BioWin computer model, a wastewater treatment process simulator that ties together biological, chemical, and physical process models. The modeling used the trends associated with the measured ammonia and nitrogen concentrations for the years 2010 to 2012 to determine the projected ammonia and nitrogen concentrations for later years (including 2015, 2022, and 2045) for the existing treatment plant. The projected concentrations accounted for future per capita ammonia and nitrogen loading (based on pre-drought conditions), future population estimates, and future water conservation. Because the measured effluent concentrations in the 2014-2015 dataset were greater than the modeled concentrations for the baseline year due to drought conditions and associated water conservation efforts in San Francisco, the water quality analysis also considered a more conservative condition based on higher per capita ammonia and nitrogen loading rates (reflecting drought conditions) calculated from the 2014-2015 dataset. This analysis is referred to as Analysis B in Appendix HYD and the estimated concentrations from this more conservative condition are used in this evaluation.

A total of five scenarios were evaluated to determine potential impacts of the project: measured effluent quality in 2015 for the existing plant (baseline) as well as estimated effluent quality with and without the project in 2022 (representative of when the project would become operational in early 2023) and in 2045 (the planning horizon for the project). A sixth scenario evaluated the contribution of the planned Eastside Recycled Water Project at the SEP (described in Table 4.1-1 in Section 4.1) to changes in ammonia and nitrogen concentrations, and the results of this scenario are discussed in Impact C-HY-2 below, which addresses cumulative water quality impacts.

Ammonia. As shown on **Figure 4.16-7** and in **Table 4.16-3**, between 2015 and 2022, the 95th percentile ammonia concentration is expected to increase from 53.7 to 60.7 mg/L without the project. By 2045, the 95th percentile ammonia concentration is projected to increase to 68.5 mg/L without the project. With implementation of the project, 95th percentile ammonia concentration is modeled to increase to 69.8 mg/L by 2045. This concentration is well below the NPDES limitations of an AMEL of 190 mg/L and an MDEL of 290 mg/L. With project implementation, the estimated increase in the 95th percentile ammonia concentration in 2045 would be about 2 percent greater than the concentration would be without the project, as shown in Table 4.16-3. Average ammonia levels would be much less than the 95th percentile concentrations.



NOTE: The Eastside Recycled Water Project (RWP) is discussed below under Impact C-HY-2 which addresses cumulative impacts related to water quality and hydrology.

SOURCE: RMC Water and Environment, Water Quality Analysis for the SEP Biosolids Digester Facilities Project, 2016

Figure 4.16-7
Measured 2015 and Estimated Future Total Ammonia SEP Effluent Concentrations, 95th Percentile

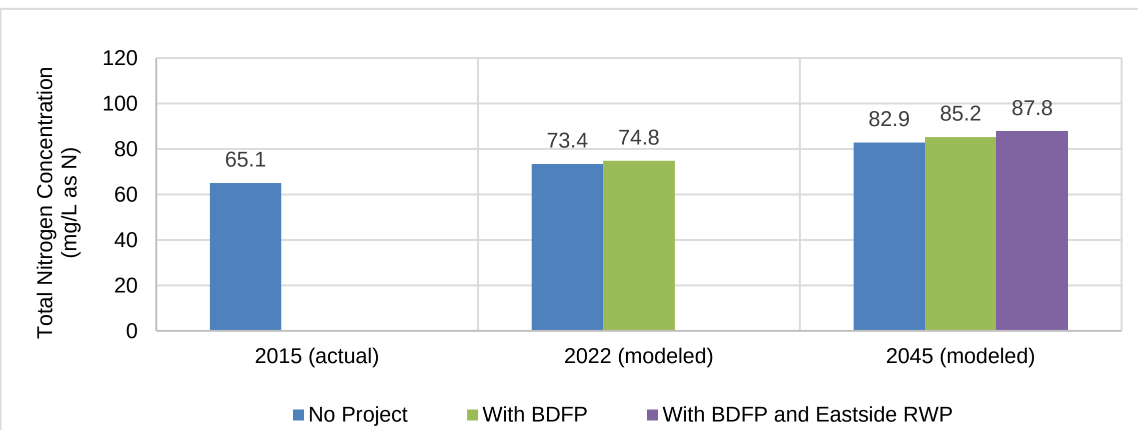
TABLE 4.16-3
PERCENT INCREASE IN TOTAL AMMONIA AND TOTAL NITROGEN SEP EFFLUENT CONCENTRATIONS

	Total Ammonia			Total Nitrogen		
	Approximate 95th Percentile Concentration, mg/L as N	Approximate Percent Increase Relative to 2015[1]	Approximate Percent Increase Relative to No Project	Approximate 95th Percentile Concentration, mg/L as N	Approximate Percent Increase Relative to 2015[1]	Approximate Percent Increase Relative to No Project
2015 No Project	53.7			65.1		
2022 No Project	60.7	13%		73.4	13%	
2022 With Project	61.2	14%	0.8%	74.8	15%	2.0%
2045 No Project	68.5	28%		82.9	27%	
2045 With Project	69.8	30%	1.8%	85.2	31%	2.9%

NOTES: mg/L as N = milligrams per liter as nitrogen
1 Increase due to population growth and water conservation

SOURCE: RMC Water and Environment, Water Quality Analysis for the SEP Biosolids Digester Facilities Project, 2016; Orion Environmental Associates

Total Nitrogen. Between 2015 and 2022, the 95th percentile total nitrogen concentrations are expected to increase from 65.1 to 73.4 mg/L without the project, as shown on **Figure 4.16-8** and in Table 4.16-3. By 2045, the 95th percentile total nitrogen concentration is projected to increase to 82.9 mg/L without the project. With implementation of the project, 95th percentile total nitrogen concentration is modeled to increase to 85.2 mg/L by 2045. This represents approximately a 3 percent increase over the 95th percentile nitrogen concentrations without the project, as shown in Table 4.16-3. Average total nitrogen levels would be much less than the 95th percentile concentrations.



NOTE: The Eastside Recycled Water Project (RWP) is discussed below under Impact C-HY-2 which addresses cumulative impacts related to water quality and hydrology.

SOURCE: RMC Water and Environment, Water Quality Analysis for the SEP Biosolids Digester Facilities Project, 2016

Figure 4.16-8
Measured 2015 and Estimated Future Total Nitrogen Effluent Concentrations

NPDES Permit Requirements

The above analysis demonstrates that with implementation of the BDFP, total ammonia concentrations would increase slightly and would remain within the effluent limitations of the existing Bayside NPDES Permit issued in 2013. Nitrogen concentrations would also increase slightly. While the permit is scheduled to be renewed in 2018, the renewed permit would be expected to continue to specify effluent limitations for the SEP that are protective of the beneficial uses of Lower San Francisco Bay and to require the SFPUC to monitor for compliance with permit requirements. Any future permit renewals would involve coordination with the San Francisco Bay RWQCB and would consider any changes in SEP operations, including BDFP implementation and any associated changes in effluent water quality, to ensure that effluent limits remain protective of beneficial uses identified in the Basin Plan.

Summary of Impact HY-5

The project would not result in ammonia concentrations in the SEP effluent that exceed the NPDES permit effluent limitations, and total nitrogen concentrations would only increase slightly. NPDES permit effluent limitations are established to ensure that discharges comply with applicable water quality standards and do not degrade water quality, as discussed in Section 4.16.2, Regulatory Framework. With expected continued compliance with NPDES permit effluent limitations and requirements during long-term project operation, impacts related to a violation of water quality standards or waste discharge requirements or degradation of water quality would be ***less than significant*** with respect to changes in SEP effluent quality, and no mitigation is required.

Mitigation: None required.

Impact HY-6: Operation of the project would not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. (Less than Significant)

The project site overlies the Islais Valley Groundwater Basin. As described in Section 4.16.1, Setting, sources of recharge to this groundwater basin include rain water, irrigation return flows, and leakage from water and sewer pipes. The project site is currently covered by impervious surfaces that prevent groundwater recharge. With implementation of the BDFP, the project site would continue to be covered by impervious surfaces, and no new impervious surfaces would be constructed at the staging areas. Therefore, implementation of the project would not change groundwater recharge compared to existing conditions.

The project would not deplete groundwater resources in this basin because no long-term dewatering would be required and the project would not withdraw groundwater from this basin for any other purposes during operation.

For these reasons, impacts related to interference with groundwater recharge and depletion of groundwater resources would be ***less than significant***, and no mitigation is required.

Mitigation: None required.

Impact HY-7: Operation of the project would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. (Less than Significant)

As discussed in Section 4.16.1, Setting, stormwater runoff from the SEP is directed to a 15-inch-diameter combined sewer within the SEP and to other combined sewers in Jerrold Avenue, Phelps Street, and Evans Avenue. Runoff is treated at the SEP, and treated effluent is discharged through the Southeast Bay Outfall and Quint Street outfalls. Once the BDFP is constructed, runoff from the project area would be directed to this same infrastructure. The project would result in a decrease in stormwater flows to this infrastructure because the City's Stormwater Management Ordinance and Stormwater Management Requirements and Design Guidelines would require the project to reduce the existing stormwater runoff flow rate and volume by 25 percent for a two-year, 24-hour design storm.

Chapter 2, Section 2.4.2.3, Architecture and Landscaping, describes low-impact development features proposed for the project, including street tree plantings, a green roof for the Solids Pretreatment Facility, and flow-through planters. However, infiltration rates at the project site have not yet been measured. The SFPUC assumes that infiltration would be feasible based on soil types at the project site and the depth to groundwater. If further studies demonstrate that infiltration is infeasible, the SFPUC would apply for modified compliance with the Stormwater Management Ordinance and Stormwater Management Requirements and Design Guidelines to adjust the amount by which the project must reduce the stormwater runoff volume and flow rate relative to existing conditions.

The Stormwater Control Plan required to be prepared for the project in accordance with the Stormwater Management Requirements and Design Guidelines would describe BMPs that would be implemented to achieve the specified reduction in stormwater flow rates and volumes as well as a plan for post-construction operation and maintenance of the BMPs. The plan must be reviewed and approved by the SFPUC as the administering agency to certify compliance with the Stormwater Management Requirements and Design Guidelines, and as the administering agency, the SFPUC would inspect stormwater BMPs once they are constructed to confirm that they perform as designed.

With compliance with the Stormwater Management Ordinance and Stormwater Management Requirements and Design Guidelines, project-related stormwater discharges would not exceed the capacity of the new or existing stormwater system and would not constitute an additional source of polluted runoff. This impact would be ***less than significant***, and no mitigation is required.

Mitigation: None required.

Impact HY-8: Operation of the project would not include the construction of structures that would impede flood flows within an existing 100-year flood zone or 100-year flood zones resulting from sea level rise. (Less than Significant)

As discussed in Section 4.16.1, Setting, above, the project site is not located within an existing 100-year flood hazard area (refer to Figure 4.16-2), and would remain outside of the 100-year flood zone in 2050 assuming 12 inches of sea level rise (refer to Figure 4.16-3). The site would be partially within the 100-year flood zone in 2100 with 36 inches of sea level rise (refer to Figure 4.16-4). These future flood zones are based on the NRC's projected rate of sea level rise that is considered likely based on the current understanding of global climate change. In the event of worst-case conditions, based on the NRC's upper range of sea level rise (66 inches) in combination with 100-year storm surge, the majority of the site could be subject to shallow flooding (refer to Figure 4.16-5). This extreme upper limit of sea level is based on very high GHG emissions scenarios and significant land ice melt assumptions.

The following analysis describes the potential for the project to exacerbate future flood hazards, assuming that the CCSF does not implement area-wide measures in the interim to control the intrusion of floodwaters related to sea level rise.

Potential for Project Structures to Exacerbate Future Flood Hazards

The BDFP could exacerbate the anticipated future flood hazards in the project area if it were to increase the frequency or severity of flooding or cause flooding to occur in an area that would not be subject to flooding without the project.

Proposed finished grade elevations at the project site range from approximately 0.6 to 4.3 feet SFD (12 to 15.7 feet NAVD88), with the lowest elevations occurring in the northernmost portion of the site. The anticipated flood elevation related to the projected amount of sea level rise would be 1.5 feet SFD (12.9 feet NAVD88) in 2100. Therefore, only the northernmost portion of the site would be subject to shallow flooding under this scenario. Assuming worst-case estimates of sea level rise, flood elevations could reach 4.0 feet SFD (15.4 feet NAVD88) and larger amounts of the project site could be subject to flooding. As described in Chapter 2, Section 2.4.2, Other Project Features, proposed facilities that could be affected by future flooding due to sea level rise of 36 inches would include flood-proofing features (e.g., precluding wall penetrations such as doorways below 2.5 feet SFD for structures in the northernmost portion of the project site). Project design would also incorporate adaptive features (e.g., elevation of critical elements within affected buildings) to provide resilience to potential worst-case flood levels. The project would not exacerbate future flooding conditions under either the projected or worse-case scenarios described above because the project would not include any topographic changes or the construction of new structures that would increase the extent of storm surge-related flooding relative to existing conditions. The project would not result in an increase in impervious surfaces that would restrict infiltration of floodwaters, nor would it create any topographic changes that would redirect flood flows or alter their flow rate. The site is already developed, and construction of new structures under the project would not redirect flood flows relative to existing conditions. None of the proposed features of the BDFP includes additional stormwater discharges that could contribute to the frequency or severity of flooding. Further, flood proofing of the proposed structures and incorporation of adaptive features would ensure that future operations of the BDFP would not be adversely affected by flooding such that there could be a disruption of wastewater treatment services, or damage to the proposed facilities that could result in a release of sewage or hazardous materials that could affect water quality. Therefore, impacts related to future flooding would be ***less than significant***, and no mitigation is required.

Mitigation: None required.

Cumulative Impacts

Impact C-HY-1: The project, in combination with past, present, and probable future projects in the site vicinity, would not result in significant adverse cumulative hydrology impacts. (Less than Significant)

Hydrology impacts are related to changes in groundwater storage and flooding. The geographic scope of cumulative impacts on groundwater storage includes the Islais Valley Groundwater Basin. Impacts related to existing and future flooding and inundation by tsunami could occur along the entire San Francisco waterfront. However, only projects in close proximity and within the same flood zones could cumulatively exacerbate flood conditions; therefore, the geographic scope for cumulative flooding impacts includes the project site and near vicinity.

Groundwater

As described in Impacts HY-2 and HY-6, the project would involve only limited dewatering from the shallow groundwater zone during construction, but could require more extensive dewatering of the upper layered sediments, including dewatering required for construction of the Anaerobic Digesters. No dewatering would be required during operation. Because no wells completed within the shallow or confined groundwater are within ½ mile of the project site, temporary project-related excavation dewatering would not result in substantial adverse effects on groundwater levels.

While the Southeast Plant Headworks Replacement project would also require excavation dewatering during construction, the Headworks project would implement measures to limit the amount of dewatering needed, such as water-impermeable shoring walls, localized sump pumps, and use of working pads made with crushed rock. The other cumulative projects at the SEP may require limited dewatering during construction. However, these projects would be required to implement controls to limit the amount of dewatering required, similar to the proposed project and the Headworks project. Due to the implementation of dewatering controls and the short durations of the cumulative projects, the cumulative effects of temporary groundwater dewatering would not result in depletion of groundwater resources. While the cumulative projects at the SEP would minimally increase the amount of impervious surfaces at the SEP, this minor increase would not affect groundwater recharge in the groundwater basin. Based on these factors, cumulative impacts related to groundwater depletion and recharge would be ***less than significant***.

Flooding

As described in Impacts HY-3 and HY-4, the near-shore areas of the Piers 94 and 96 staging areas are located within an existing 100-year flood zone and a large part of these staging areas is located within a potential tsunami inundation zone. However, the project would not expose structures to risk of loss involving flooding or inundation by seiche or tsunami during construction because no permanent structures would be constructed. Therefore, the project would not contribute to any cumulative impacts related to exposing structures to risk of loss due to flooding or tsunami inundation. While the Asphalt and Concrete Recycling and Production Plant at Pier 94 and the Pier 96 Bulk Export Terminal project would introduce new site occupants within the same tsunami inundation zone, cumulative impacts related to exposing people to injury or death as a result of tsunami inundation zone would be less than significant. This is because, as for the project, in the event that the National Warning System issues a tsunami warning, the CCSF would initiate its outdoor warning system and issue emergency instructions should the San Francisco waterfront be threatened. Use of this system would allow adequate warning time to avoid the area in the event of a tsunami and for evacuation of the area should workers be present when the warning is issued.

As described in Impact HY-8, a portion of the BDFP site could be subject to shallow flooding as a result of future climate change-induced sea level rise. Past, present, and probable future development in such areas could cumulatively exacerbate future flooding conditions if the development were to increase the frequency or severity of flooding or cause flooding in areas where it would not have otherwise occurred, resulting in a substantial risk of loss, injury, or death. Cumulative projects located in the northernmost portion of the SEP such as the Southeast Plant Headworks Replacement Project, SEP Chemical System Relocation and Facilities Upgrade, SEP Primary/Secondary Clarifier Upgrades, and SEP Oxygen Generation Plant Replacement Project are also located in the same future flood zone. However, these are all projects that would be implemented by the SFPUC and would be subject to the requirements of the City's Sea Level Rise Guidance as well as the sea level rise guidance for SSIP projects (the San Francisco Design Tides and Sea Level Rise Recommendations prepared by the SFPUC).[65] Further, none of these projects would result in substantial increases in impervious surfaces that would restrict infiltration of floodwaters, nor would they create any substantial topographic changes that would redirect flood flows or alter their flow rate. The SEP is already developed, and construction of new structures under the project would not redirect flood flows relative to existing conditions. None of the proposed features of the BDFP or the cumulative projects includes additional stormwater discharges that could contribute to the frequency or severity of flooding. The SFPUC Southeast Outfall Islais Creek Crossing Replacement project, Southeast Community Facility Revitalization, and Quint Street Lead Track area are also located in the future flood zone but would not include the construction of new structures or changes in runoff patterns that could exacerbate flooding. Therefore, cumulative impacts related to future flooding would be ***less than significant***.

Mitigation: None required.

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[65] SFPUC, *San Francisco Design Tides and Sea Level Rise Recommendations*, March 12, 2015.

Impact C-HY-2: The project, in combination with past, present, and probable future projects in the site vicinity, would not result in significant adverse cumulative water quality impacts. (Less than Significant)

Water quality impacts are related to changes in wastewater and stormwater flows to the Bayside Drainage Basin of the City's combined sewer system and changes in the SEP effluent composition. Therefore, the geographic scope of potential cumulative impacts on water quality encompasses the Bayside Drainage Basin of the combined sewer system where the project is located and Lower San Francisco Bay where the SEP effluent is discharged. As discussed above, compliance with applicable regulatory requirements designed to reduce the cumulative effects of development on water quality would ensure that the project would not result in any significant water quality impacts as a result of construction-related discharges (Impact HY-1) and operational stormwater discharges (Impact HY-7). All cumulative development in San Francisco would be subject to the same regulatory framework as described for the project for these impacts, and compliance with existing regulations would serve to ensure that any cumulative impacts on water quality as a result of the cumulative projects in combination with the BDFP would be ***less than significant***.

As discussed in Impact HY-5, operation of the project would not result in changes in effluent composition that would violate applicable water quality standards, violate the effluent limitations of the Bayside NPDES Permit, or otherwise substantially degrade water quality. The only cumulative project included in Table 4.1-1 that would also affect the composition of the SEP effluent water quality is the Eastside Recycled Water Project, which could be constructed beginning in 2026 and operational as of 2029. The Water Quality Analysis conducted for the BDFP (discussed above in Impact HY-5) considered the effects of the Eastside Recycled Water Project on effluent composition.[66] The analysis concluded, as shown on Figures 4.16-7 and 4.16-8, that with the addition of this project, 95th percentile ammonia concentrations in the SEP effluent would increase to 71.8 mg/L and 95th percentile total nitrogen concentrations would increase to 87.8 mg/L. The 95th percentile ammonia concentrations would be below the NPDES permit limitations of an AMEL of 190 mg/L and an MDEL of 290 mg/L and only approximately 2 percent higher than would occur without the project and the Eastside Recycled Water Project. The 95th percentile total nitrogen concentrations would be about 3 percent higher than would occur without the project and the Eastside Recycled Water Project. Therefore, the cumulative impact of these two projects on water quality would be ***less than significant***.

Mitigation: None required.

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66 RMC Water and Environment, Technical Memorandum: Water Quality Analysis for the SEP Biosolids Digester Facilities Project, March 2016.

4.17 Hazards and Hazardous Materials

This section describes existing conditions in the Biosolids Digester Facilities Project (BDFP or project) vicinity with respect to hazards and hazardous materials, including the hazardous materials currently used at the Southeast Water Pollution Control Plant (Southeast Plant or SEP) for biosolids treatment. It discusses the potential for the BDFP to encounter hazardous materials in soil and/or groundwater in the project vicinity, the potential to encounter naturally occurring asbestos, the potential for hazardous materials proposed for future use under the BDFP to pose a hazard to the public or the environment, potential fire hazards, the potential to interfere with an emergency plan, and potential hazards related to proximity to schools and airports. Mitigation measures are identified to avoid or reduce significant adverse impacts, as appropriate.

4.17.1 Setting

4.17.1.1 Definition of Hazardous Materials

A *hazardous material*, defined in Section 25501(n) of the California Health and Safety Code, is a material that is listed by statute or one that "because of its quantity, concentration, or physical or chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released to the workplace or environment." Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications as well as in residential areas to a limited extent.

A waste is any material that is discarded after primary use, recycled, or inherently waste-like (such as an unused by-product of an industrial process). Title 22 of the California Code of Regulations (CCR), Division 4.5, Chapter 11 (Identification and Listing of Hazardous Waste) contains regulations for the classification of hazardous wastes.[1] A waste is considered a hazardous waste if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3 of Chapter 11. Articles 4 and 4.1 also list specific hazardous wastes and Article 5 identifies specific waste categories, including wastes considered hazardous under the federal Resource Conservation and Recovery Act (RCRA); wastes that are considered hazardous under state definitions but not under federal definitions (non-RCRA hazardous wastes); extremely hazardous wastes, classified based on their high toxicity levels or reactivity with water; hazardous wastes of concern; and special wastes. If improperly handled and if released to the soil, groundwater, or air (in the form of vapors, fumes, or dust), hazardous materials and wastes can result in public health hazards.

4.17.1.2 Existing Hazardous Materials Uses for Biosolids Processing

Chemicals used for existing biosolids handling processes at the SEP include polymers and ferric chloride (iron chloride). A polymer is a chemical that is used to promote thickening in the

[1] CCR 22 Sections 66261.1, et seq.

treatment process, and polymers are not considered hazardous materials. Common examples of polymers include polystyrene, neoprene, nylon, and silicone. Polymer use in dewatering increases solids content. The existing solids treatment facilities include seven storage tanks of polymer, with a total volume of 10,000 gallons. Ferric chloride, an iron salt, is used to control the buildup of struvite[2] in the digesters, pipes, and other equipment. This chemical is considered hazardous due to its corrosivity, and an irritant in case of skin contact, eye contact, or inhalation; the amount of tissue damage from exposure depends on length of contact. It would be toxic if ingested.[3] Ferric chloride reacts violently with metals, forming a flammable/explosive gas. A total of 16,000 gallons of ferric chloride solution is stored in aboveground tanks at the SEP.[4] In addition, a small quantity of diesel fuel (1,000 gallons) is stored for use in backup generators.

4.17.1.3 Digester Gas Management

Digester gas that is produced as a byproduct of the digestion process is comprised mostly of methane and carbon dioxide. As discussed in Chapter 2, *Project Description*, the 1.3 million cubic feet of digester gas currently produced by the biosolids treatment process is primarily used on-site to produce heat and power through the energy recovery process. Excess digester gas that cannot be used in the energy recovery process is flared. Methane, one of the primary components of digester gas, forms explosive mixtures in air. The lower explosive limit of methane is 5 percent by volume and the upper limit is 15 percent by volume. Methane is only explosive at concentrations greater than the lower explosive limit and less than the upper explosive limit.

4.17.1.4 Hazardous Materials in Soil and Groundwater

Based on the historic use of the SEP as a wastewater treatment plant and the Jerrold Avenue properties as an asphalt plant and vehicle maintenance facility, soil and/or groundwater contamination could exist at the project site. The results of regulatory agency database searches as well as environmental investigations and underground storage tank removals conducted at each site are discussed below to assess existing soil and groundwater contamination.

Regulatory Agency Database Search

On behalf of the San Francisco Planning Department, Environmental Data Resources (EDR) conducted a regulatory database search to identify permitted hazardous materials uses and environmental cases at the project site and in the vicinity.[5] The results of this database search are briefly discussed below, and a discussion of the existing soil and groundwater quality at the SEP, Central Shops, and Asphalt Plant, based on site-specific reports follows this discussion.

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[2] Struvite forms when concentrations of soluble magnesium, ammonium, and orthophosphate exceed levels that promote the formation of crystals. Struvite can build up and clog wastewater treatment equipment.

[3] National Institute for Occupational Safety and Health (NIOSH), International Chemical Safety Cards, Ferric Chloride (Anhydrous). July 22, 2015. Available online at http://www.cdc.gov/niosh/ipcsneng/neng1499.html. Accessed on October 28, 2015.

[4] AEW Engineering, Inc., *Draft Hazardous Materials Business Plan, Southeast Treatment Plant, San Francisco, California*, July 2015.

[5] EDR, *Summary Radius Map Report, Biosolids Digester Facilities Project, 1800 and 1801 Jerrold Avenue, San Francisco CA 94124*, August 20, 2015.

The regulatory agency databases identify three addresses for the SEP: 750 Phelps Street and 1700 and 1701 Jerrold Avenue. The SEP was identified in multiple regulatory agency lists as summarized in **Table 4.17-1**. The SEP has historical or current underground storage tanks (USTs) as indicated by inclusion in the Active UST Facilities (UST), Hazardous Substance Storage Container (HIST UST), Facility Inventory (CA FID UST), and Statewide Environmental Evaluation and Planning System (SWEEPS UST) databases. Identification in the Leaking Underground Storage Tank (LUST) and historic Cortese databases indicates that a petroleum release may have affected soil or groundwater conditions at the SEP.

TABLE 4.17-1
REGULATORY AGENCY DATABASE SEARCH FINDINGS FOR PROJECT SITE

Location	Database Listed In
1800 Jerrold Avenue–Central Shops	UST, HIST UST, CA FID UST, SWEEPS UST, LUST, RGA LUST, RCRA-NonGen, RCRA-SQG, HAZNET, EMI
1801 Jerrold Avenue–Asphalt Plant	HIST UST, CA FID UST, SWEEPS UST, HAZNET, EMI
1700 and 1701 Jerrold Avenue–San Francisco Public Utilities Commission (SFPUC) Southeast Water Pollution Control Plant (SEP)	UST, CA FID UST, SWEEPS UST, LUST, HIST CORTESE, RCRA-LQG
750 Phelps Street–SFPUC SEP	HIST UST, LUST, HIST CORTESE, CHMIRS, RCRA-SQG, EMI

NOTES:
CA FID UST = Facility Inventory Database, California Environmental Protection Agency (CalEPA), September 29, 1995.
CHMIRS = California Hazardous Material Incident Reporting System, Office of Emergency Services (OES), August 3, 2015.
EMI = Emissions Inventory Data, California Air Resources Board (CARB), April 28, 2014.
HAZNET = Facility and Manifest Data, CalEPA, November 19, 2014
HIST CORTESE = Hazardous Waste and Substance Site List, California Department of Toxic Substances Control (DTSC), April 8, 2009.
HIST UST = Hazardous Substance Storage Container Database, State Water Resources Control Board (SWRCB), October 15, 1990.
LUST = Leaking Underground Storage Tank Case Listing, California Regional Water Quality Control Board (RWQCB), May 21, 2001.
RCRA_LQG = Resource Conservation and Recovery Act-Large Quantity Generator, US Environmental Protection Agency (US EPA), March 10, 2015
RCRA NonGen = Resource Conservation and Recovery Act-Non Generator, US EPA, March 10, 2015
RCRA-SQG = Resource Conservation and Recovery Act-Small Quantity Generator, US EPA, March 10, 2015
RGA LUST = Recovered Government Archive Leaking Under Ground Storage Tank, SWRCB, no date
SWEEPS UST = Statewide Environmental Evaluation and Planning System Underground Storage Tank Listing, SWRCB, August 11, 2005.
UST = Active UST Facilities, SWRCB, June 15, 2015.

SOURCE: EDR, Summary Radius Map Report, Biosolids Digester Facilities Project, 1800 and 1801 Jerrold Avenue, San Francisco CA 94124, August 20, 2015.

Both the Central Shops and the Asphalt Plant have historical or current USTs as indicated by inclusion in the UST, HIST UST, CA FID UST, and SWEEPS UST databases. The Central Shops was also identified in the LUST and Recovered Government Archive Leaking Under Ground Storage Tank (RGA LUST) databases, indicating that a petroleum release may have affected soil or groundwater conditions at the Central Shops. In addition, there are five LUST sites within one-eighth mile of the SEP and 25 LUST sites within one-quarter mile. The relatively large number of LUST sites in the project vicinity suggests the potential for shallow groundwater contamination from nearby land uses.

The SEP is identified as a large quantity generator of hazardous wastes under the Resource Conservation and Recovery Act (RCRA-LQG). In addition, the Central Shops are identified as small quantity generators of hazardous waste under RCRA (RCRA SQG), and the Central Shops site is identified in the RCRA Non Generator (RCRA NonGen) database, indicating that it is no longer regulated under RCRA. Both the Central Shops and the Asphalt Plant have manifested hazardous wastes for off-site disposal as indicated by inclusion in the Facility and Manifest Data (HAZNET) database. However, all of these are regulated activities related to management of hazardous wastes. Similarly, inclusion of the SEP, Central Shops, and Asphalt Plant in the Emissions Inventory Data (EMI) database indicates that all three sites have historically reported emissions of toxic and criteria air pollutants to the Bay Area Air Quality Management District (BAAQMD) as part of an emissions inventory. Inclusion of the sites in these databases is not indicative of potential soil or groundwater contamination.

The California Hazardous Material Incident Reporting System (CHMIRS) incident at 750 Phelps Street reported to the California Office of Emergency Services was recorded as a release of sewage in 2014. Further review by the SFPUC indicates that incident refers to a release of secondary treated wastewater (disinfected and dechlorinated) to Islais Creek through the Quint Street Outfall for less than three minutes during resumption of plant operation after shutdown in May 2014. This also is not indicative of potential soil and groundwater contamination.

Environmental Investigations and Underground Tank Removals

The San Francisco Public Utilities Commission (SFPUC) completed an environmental investigation of the project site in 2016. The Environmental Investigation Report provides a summary of previous investigations at the Central Shops and Asphalt Plant along with the results of sampling conducted in 2015 to evaluate soil and groundwater quality within the portion of the project site located on the existing SEP and at the Central Shops.[6] In the discussions below, the results of these environmental investigations are compared to two screening levels established by regulatory agencies responsible for the oversight of environmental site investigations and cleanups in the San Francisco Bay Area. These screening levels are conservative estimates of safe levels of a chemical that a person could be exposed to in soil or groundwater. If the concentration of a chemical in the soil or groundwater is below the screening level, then it can be assumed that the chemical would not pose a health risk to a person. The screening levels evaluated include:

- Environmental Screening Levels (ESLs) established by the Regional Water Quality Control Board – San Francisco Bay Region (RWQCB) for commercial/industrial land uses.[7]
- Screening Levels for Soil recommended by the Department of Toxic Substances Control (DTSC) (DTSC SLs) for commercial/industrial land uses.[8]

In general, the ESL is lower than the DTSC SL. Accordingly, the DTSC SL is only discussed where the concentration of a chemical exceeds the DTSC SL, but not the ESL.

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[6] Biosolids Digester Facilities Project (BDFP) Consultant Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.

[7] RWQCB, Environmental Screening Level Summary Tables, Rev. 3, February 2016. Available online at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/ESL/ESL%20Workbook_ESLs_Interim%20Final_22Feb16_Rev3_PDF.pdf.

[8] California Department of Toxic Substances Control, Human and Ecological Risk Office (HERO), *Human Health Risk Assessment (HHRA) Note, HERO HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs)*, June 2016.

The analytical results of environmental investigations at the project site and staging areas on Port of San Francisco (Port) property are also compared to federal and California hazardous waste classification criteria to evaluate disposal options for the soil. These criteria include the state Total Toxicity Limit Concentration (TTLC) and Soluble Toxicity Limit Concentration (STLC) and the federal Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit. All of these criteria are described in Section 4.17.2.2, State Regulations, below.

Groundwater results are also compared to the discharge limitations provided in Article 4.1 of the San Francisco Public Works Code to evaluate whether the groundwater would be suitable for discharge to the combined sewer system. (Refer to Section 4.16, Hydrology and Water Quality, of this EIR for a description of this regulation.)

1800 Jerrold Avenue Property (Central Shops)

Vehicle repair and maintenance activities at the Central Shops property have included the storage and use of fuels, lubricants, and solvents since the 1950s. As summarized in the Environmental Investigation Report, these six USTs have been removed from the Central Shops:

- March 1994 – One 1,000-gallon waste oil tank was removed from the site.
- June 1999 – Three 6,000-gallon gasoline USTs associated with the UST complex were removed and soil samples collected from the UST excavation. The San Francisco Department of Public Health (SFDPH) issued case closure for the waste oil tank and three gasoline USTs following abandonment of the monitoring wells in 2012.
- February 2012 – Two 10,000-gallon gasoline USTs were removed.

Based on the chemical analyses performed during a 2013 environmental investigation of this site and in 2015 as part of the environmental investigation, total petroleum hydrocarbons as gasoline (TPH-gasoline), total petroleum hydrocarbons as diesel (TPH-diesel), total petroleum hydrocarbons as motor oil (TPH-motor oil), benzene, antimony, arsenic, cadmium, cobalt, copper, lead, nickel, naphthalene and benzo(a)pyrene (a semi-volatile organic compound) were reported in at least one soil sample at a concentration above the respective commercial ESL or DTSC SL. Methyl tert-butyl ether (MTBE), a gasoline additive that is known to cause cancer, was not detected in any of the soil samples. The environmental investigation report indicates that all but two of the arsenic concentrations are within background levels for Bay Area soils, and therefore do not necessarily result from site activities, rather the presence is likely due to naturally occurring arsenic in the soil.

Based on the soil analytical results, the total or soluble metal concentrations for copper, lead, and zinc exceed the respective California and federal hazardous waste criteria. Several soluble concentrations of lead exceed the federal TCLP regulatory limit. However, statistical analysis of the analytical results in accordance with United States Environmental Protection Agency (USEPA) protocol indicates that these results are outliers and are not considered representative of the entire volume of soil that would be excavated. Classification of the soil as a California hazardous waste or federal hazardous waste would be determined based on a waste profile application prepared by the SFPUC, which would be used to select the appropriate disposal site for the soil.

The concentrations of several compounds detected in groundwater exceeded their respective SFPUC batch wastewater discharge requirements specified in Article 4.1 of the San Francisco Public Works Code. These include TPH-gasoline, TPH-diesel, TPH-motor oil, and five metals (chromium, copper, lead, nickel, and zinc).

1801 Jerrold Avenue Property (Asphalt Plant)

San Francisco Public Works (SFPW) operated an asphalt plant at 1801 Jerrold Avenue that was built in 1954[9] and decommissioned in 2009.[10] According to SFDPH files, the asphalt plant used four underground concrete tanks: one 6,000-gallon and one 10,000-gallon asphalt emulsion tank, and two 10,000-gallon liquid asphalt tanks.[11] The 6,000-gallon tank may also have been used for storage of diesel fuel in the past.[12] There are no records of tank removal; therefore, these USTs are believed to remain in the ground.

Based on soil sampling in 2013 and 2014, the concentrations of several compounds in the soil exceed the respective commercial ESLs, including TPH-diesel, TPH-motor oil, several semi-volatile organic compounds (SVOCs), arsenic, copper, lead, and nickel. As with the Central Shops site, the environmental investigation report indicates that all of the arsenic concentrations are within background levels for Bay Area soils, and would therefore not necessarily result from site activities.

Based on total and soluble lead concentrations, some of the soil would be considered a California hazardous waste. TPH-diesel, TPH-motor oil, lead, nickel, and zinc concentrations would exceed their respective SFPUC batch wastewater discharge requirements.[13]

Southeast Water Pollution Control Plant

As described in Chapter 2, *Project Description*, the project site includes two areas located within the north side of the existing SEP property at 750 Phelps Street and 1700 Jerrold Avenue. Soil and groundwater within these areas are described below.

The portion of the project site referred to as the SEP Boneyard in the environmental investigation report is currently used for storage of miscellaneous equipment and compressed gases.[14] Based on the soil investigation conducted in 2015, the concentrations of several compounds in the soil—including TPH-diesel, TPH-motor oil, naphthalene, polychlorinated biphenyls (PCBs), arsenic, cadmium, cobalt, copper, lead, mercury, and nickel—exceed their respective commercial ESL or

9 San Francisco Public Works, The City and County of San Francisco Municipal Asphalt Plant Study, October 2006.
10 BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
11 San Francisco Public Works, *Memorandum regarding Underground Storage Tanks at the Municipal Asphalt Plant*, June 10, 1991.
12 Clayton Environmental Consultants, Inc., *Monitoring Plan for the Underground Diesel Tank at 1801 Jerrold Avenue, San Francisco, California*, January 12, 1990.
13 BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
14 BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.

DTSC SL. MTBE was not detected in any of the soil samples. As with the Central Shops site, the environmental investigation report indicates that all of the average arsenic concentration is within background levels for Bay Area soils, and the presence is likely due to naturally occurring arsenic.

Based on total or soluble copper, lead, and zinc concentrations, some of the soil would be considered a California hazardous waste. TPH-motor oil, cadmium, copper, lead, nickel, and zinc concentrations also exceeded their respective SFPUC batch wastewater discharge requirements.[15]

The portion of the project site referred to as the SEP Maintenance Area in the environmental investigation report is currently used for various facility maintenance shops and chemical storage.[16]

Based on the soil investigation conducted in 2015, the concentrations of several compounds in the soil—including TPH-diesel, TPH-motor oil, benzo(a)pyrene, arsenic, lead, and nickel—exceed the respective ESLs. MTBE was not detected in any of the soil samples. As with the Central Shops site, the environmental investigation report indicates that all of the average arsenic concentration is within background levels for Bay Area soils, and the presence is likely due to naturally occurring arsenic. Based on soluble lead, some of the soil would be considered a California hazardous waste. In the groundwater, copper, lead, mercury, nickel, and zinc concentrations exceeded their respective SFPUC batch wastewater discharge requirements.[17]

Pier 94 Backlands and Pier 94

The 27-acre Pier 94 Backlands area was created during the 1960s and 1970s through filling of the area with dredge spoils and construction debris. Unauthorized municipal refuse was also used as fill material in a 14-acre area that partially underlies the Pier 94 Backlands and Pier 94. This area is referred to as the Pier 94 landfill. Regional water quality control boards regulate discharges of waste that could affect the quality of waters of the state, including discharges of solid waste to land, through the issuance of waste discharge requirements. Since 1987, the Pier 94 landfill has been regulated as a non-hazardous solid waste disposal site under Waste Discharge Requirements (WDRs) issued by the RWQCB.[18] **Figure 4.17-1** shows the extent of the regulated landfill. Within the regulated landfill, the fill material is covered by a soil cap. A geotechnical investigation conducted in 2012 concluded that for the most part, the existing cover meets or exceeds the cover requirements specified in Title 27 of the California Code of Regulations because the annual percolation through the existing cover would be less than would occur through a cover designed as specified in the regulations, except at three locations.[19]

[15] BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
[16] BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
[17] BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
[18] California Regional Water Quality Control Board, San Francisco Bay Region, Updated Waste Discharge Requirements and Rescission of Order N. 87-061 for: City and County of San Francisco, San Francisco Port Commission, Pier 94 Class III Landfill, San Francisco, San Francisco County, Order No. R2-2003-0055.
[19] T&R/RYCG, *Geotechnical Investigation, Pier 94 Backland Improvements, San Francisco, California*, July 5, 2012.

SOURCE: T&R/RYCC, Site Investigation Report, Pier 94 Backland Improvements and Amador Street Sanitary Pump Station, San Francisco, California, June 15, 2012, adapted by ESA+Orion

SFPUC Biosolids Digester Facilities

Figure 4.17-1

Area of Regulated Landfill at Pier 94 and Pier 94 Backlands

Order No. R2-2003-0055 implements the waste discharge requirements for the landfill. In accordance with this order, groundwater beneath the landfill and surrounding bay waters has been sampled on a quarterly to semi-annual basis since 1989. Historic sampling indicates that landfill materials have not affected groundwater or surface water quality. No volatile organic compounds (VOCs) or SVOCs have been detected in groundwater or surface water, and metals concentrations are below water quality criteria. TPH-diesel has been detected at concentrations of up 6.4 milligrams per liter (mg/L) in groundwater samples from an area near an aboveground fuel tank formerly located at the aggregate processing facility. The WDRs required additional evaluation and monitoring of TPH-diesel in the groundwater.

Landfill investigations conducted in 1989 and 1990 identified several VOCs in subsurface soil gas samples from within the regulated area.[20] None of the concentrations exceed the ESL and methane was not detected in any of the soil gas samples. However, the geotechnical report for previously proposed improvements in the Pier 94 Backlands recommends that a soil gas investigation be conducted if enclosed structures or structures for human occupancy are proposed within the landfill.

The WDRs prohibit any excavation or reconfiguration within the regulated landfill without prior RWQCB approval. Under the WDRs, RWQCB would require (1) submittal of a technical report describing any proposed changes to site development that may affect the water quality, (2) maintenance of the integrity of the landfill cap, and (3) verification that water quality impacts are not occurring.[21]

On the basis of the analytical results for one soil sample collected from within the regulated landfill and an additional six samples from around the perimeter of the Pier 94 Backlands in 2012, only the concentrations of arsenic and lead in the soil exceed ESLs for commercial/industrial land uses.[22] However, as for soil samples from the project site, the arsenic concentration is within background levels for Bay Area soils, and the presence is likely due to naturally occurring arsenic. No other constituents were detected at concentrations greater than ESLs. In addition, some portions of the soil would be classified as a California hazardous waste based on total or soluble lead concentrations. Field screening during this investigation did not detect organic vapors.

1550 Evans Avenue

Based on a Phase I Environmental Site Assessment conducted in 2007[23] and a Phase II Environmental Site Assessment conducted in 2012,[24] the property at 1550 Evans Avenue was historically used for meat packing and tannery operations. The buildings associated with these uses were removed in the early 1970s. The two buildings currently present at the site were built in 1978;

20 T&R/RYCG, *Geotechnical Investigation, Pier 94 Backland Improvements, San Francisco, California*, July 5, 2012.
21 RWQCB, *Pier 94 Landfill Order No. R2-2003-0055. Updated waste Discharge Requirements and Rescission of Order No. 87-061 for: City and County of San Francisco, San Francisco Port Commission, Pier 94 Class III Landfill, San Francisco County*, June 18, 2003.
22 T&R/RYCG, *Site Investigation Report, Pier 94 Backland Improvements and Amador Street Sanitary Pump Station, San Francisco, California*, June 15, 2012.
23 Fugro West, Inc., *Phase I Environmental Site Assessment, 1550 Evans Avenue and 330 Newhall Street, San Francisco, California*. January 2007.
24 AEW Engineering, Inc., *Phase II Environmental Site Assessment Report, 1550 Evans Avenue and 330 Newhall Street*. August 2012.

one was used as an office building and the other was used as a warehouse. Hazardous building materials surveys for the buildings identified asbestos-containing materials in both buildings and lead in the ceramic tile of one building. Soil sampling conducted as part of the Phase II Environmental Assessment indicates that a small portion of the soil beneath the site would be classified as a California hazardous waste based on soluble lead concentrations, but the remainder of the soil would be non-hazardous waste. None of the constituents analyzed exceeded background levels or ESLs current at the time of the investigation.

Naturally Occurring Asbestos

In 1986, the California Air Resources Board (CARB) identified naturally occurring asbestos, which is present in many parts of California, as a toxic air contaminant (TAC). Naturally occurring asbestos is commonly associated with serpentine[25] and ultramafic[26] rock types such as serpentinite of the Franciscan Complex. Serpentinite rock is apple green, brown, reddish brown, and gray to black and has a waxy or shiny appearance. The usual appearance of serpentine is fine grain and compact, but it can be flaky or fibrous. Chrysotile asbestos (a form of asbestos from the serpentine mineral group) and amphibole asbestos (including crocidolite) are naturally occurring asbestos minerals that may present a human health hazard if they become airborne and are inhaled.

The environmental investigations for each portion of the project site on the SEP, Central Shops, and Asphalt Plant included selected analysis of the fill materials for naturally occurring asbestos.[27] The samples were analyzed by CARB Method 435 for the determination of asbestos content of serpentine aggregate, which has a detection limit of 0.25 percent asbestos. None of the soil samples analyzed contained asbestos at concentrations greater than 0.25 percent.[28] Naturally occurring asbestos was not identified in the near-surface soil samples from within the Pier 94 Backlands collected during a 2012 site investigation.[29]

4.17.1.5 Hazardous Building Materials

Hazardous materials, such as asbestos, lead, and PCBs, may also be contained in building materials and released during demolition activities. The likelihood of hazardous materials in building components can be generally assessed based on the age of the buildings, as these materials were phased out of use during the 1970s and 1980s. As shown in Table 2-12 in Chapter 2, *Project Description*, the project would demolish three Central Shops buildings constructed in 1959; Building 870 at the SEP constructed in 1952; belowground structures at the

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[25] Serpentine is a naturally occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.

[26] Ultramafic rocks are one type of igneous rock (formed at high temperatures well below the surface of the earth) that is rich in iron and magnesium.

[27] BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.

[28] BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.

[29] T&R/RYCG, *Site Investigation Report, Pier 94 Backland Improvements and Amador Street Sanitary Pump Station, San Francisco, California*, June 15, 2012.

former Asphalt Plant site constructed in 1954; and two structures located at 1550 Evans Avenue constructed in 1978. In addition, water pump stations and an electrical substation constructed in the early 1980s would be removed. Because of the age of these structures, the hazardous building materials described below are likely to be present.

Asbestos

Asbestos is a naturally occurring fibrous material that was used as a fireproofing and insulating agent in building construction materials before such uses were banned by the USEPA in the 1970s, although some use of non-friable[30] asbestos in roofing materials still exists. Asbestos can be found in such materials as ducting insulation, wallboard, shingles, ceiling tiles, floor tiles, insulation, plaster, floor backing, and many other building materials. Asbestos and asbestos-containing materials are considered both a hazardous air pollutant and a human health hazard. The risk to human health is from inhalation of airborne asbestos, which commonly occurs when asbestos-containing materials are disturbed during demolition and renovation activities.

Lead

Lead and lead compounds have been historically added to paint as pigment and to speed drying, increase durability, retain a fresh appearance, and resist moisture (which causes corrosion). The CCR defines lead-based paint as paint that contains 1.0 milligram of lead per square centimeter of paint, or 5,000 milligrams per kilogram (mg/kg) of lead.[31] In 1978, the United States Consumer Product Safety Commission set the allowable lead levels in paint used for residential purposes and public buildings at 0.06 percent by weight in a dry film of newly applied paint. The Consumer Products Safety Improvement Act of 2008 changed the limit to 0.009 percent lead. However, lead-based paint may still be used in some applications today, such as coatings used to refinish industrial or agricultural equipment; building and equipment maintenance coatings; products marketed solely for use on billboards, road signs, and similar products; touch-up coatings for agricultural equipment, lawn and garden equipment, and appliances; and catalyzed coatings marketed solely for use on radio-controlled model powered airplanes.[32]

Lead is toxic to humans and can cause a range of human health effects depending on the level of exposure. Lead dust is of special concern, because the smaller particles are more easily absorbed by the body. Common methods of paint removal, such as sanding, scraping, and burning as well as torch cutting of equipment can create excessive amounts of dust.

Lead-based paints are likely present in the buildings and structures that would be demolished.

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[30] Non-friable asbestos refers to asbestos-containing materials that include asbestos fibers in a solid matrix that does not allow for them to become crumbled or reduced to powder or be easily released.
[31] CCR 17 §35033.
[32] United States Consumer Product Safety Commission, Office of Compliance, Ban of Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint, 16 CFR 1303, November 2011.

Polychlorinated Biphenyls (PCBs)

PCBs are oils that were formerly placed in many types of electrical equipment, such as transformers and capacitors, primarily as electrical insulators. They may also be found in hydraulic fluid used for hoists, elevators, and other features. Years after widespread and commonplace installation, it was discovered that exposure to PCBs may cause various health effects and that PCBs are highly persistent in the environment. The USEPA has listed these substances as carcinogens. Under the Toxic Substances Control Act, the USEPA began to impose bans on PCB manufacturing and sales and on most PCB uses in 1978, but some electrical transformers in use today use oils that contain PCBs. The Toxic Substances Control Act requires incineration or an alternative destruction method for oils containing PCB concentrations greater than 50 parts per million, and requires that free liquids be drained from electrical equipment prior to disposal and that the liquids be appropriately disposed of. In California, PCB wastes are regulated as hazardous waste if the PCB concentration exceeds 50 parts per million or the soluble concentration exceeds 5 parts per million as oily liquid.

Most fluorescent light ballasts manufactured before 1978 contain PCBs. Ballasts manufactured after January 1, 1978, do not contain PCBs and should be labeled as such on the ballast. Approved disposal methods for PCB-containing ballasts depend on the condition of the ballast and the PCB content. If the PCB concentration is less than 50 parts per million and the ballast contains a small, intact, non-leaking capacitor, the ballast may be disposed of at a municipal landfill. In general, all leaking ballasts and ballasts containing PCB concentrations greater than or equal to 50 parts per million must be incinerated or destroyed by alternative methods, disposed of in a hazardous waste landfill, or decontaminated using approved methods.

Di (2-ethylhexyl) Phthalate (DEHP)

Between 1979 and the early 1990s, DEHP was used in place of PCBs as a dielectric fluid in some fluorescent light ballasts and other electrical equipment.[33] DEHP is classified as a probable human carcinogen by the United States Department of Health and Human Services and as a hazardous substance by the USEPA. Because of this, ballasts containing DEHP must be legally disposed of; ballast incineration or a combination of ballast recycling and incineration are recommended for complete destruction of DEHP.

Mercury

Spent fluorescent lamps and tubes commonly contain mercury vapors and are considered a hazardous waste in California.[34] Regulations adopted in 2004 classified all fluorescent lamps and tubes in California as a hazardous waste because they contain mercury. Because they are considered a hazardous waste, all fluorescent lamps and tubes must be recycled or taken to a universal waste handler.

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33 Green Lights Recycling, Inc., "Ballasts Facts." Available online at www.greenlightsrecycling.com/ballast%20 Facts.htm. Accessed on August 29, 2016.

34 CCR 22 Section 66261.50.

4.17.1.6 Wildfire Hazards

Based upon fire hazard mapping by the California Department of Forestry and Fire Protection (CAL FIRE) Forest Resource Assessment Program,[35] the SEP and staging areas are not located within identified high fire hazard areas.

4.17.1.7 Schools and Day Care Facilities

There is one day care facility within one-quarter mile of the site. The Wu Yee South East Child Development Center, a children's daycare, is located at the Southeast Community Facility at 1300 Phelps Street and next to the Southeast Greenhouses.[36]

4.17.1.8 Emergency Response Plans

The City and County of San Francisco (CCSF or City) Emergency Response Plan addresses the roles and responsibilities of CCSF during all-hazards emergency response, in particular its interaction with regional, state, and federal entities and the role of the San Francisco Emergency Operations Center and City agencies.[37] The Transportation Annex of the Emergency Response Plan describes the procedures for assessment, identification of temporary alternative solutions, and restoration of damage to transportation systems, facilities and infrastructure due to an emergency incident. To provide flexibility for incident response to select appropriate routing, the plan does not specify designated emergency response or evacuation routes. The Earthquake Annex of the Emergency Response Plan provides an overview of considerations for CCSF response to a major earthquake in the San Francisco Bay Area. The primary purpose of this part of the plan is to support effective management of the initial earthquake response.

The SFPUC Wastewater Enterprise Emergency Operations Plan outlines the Wastewater Enterprise's overall emergency preparedness measures, emergency management organization, emergency operations, roles and responsibilities. Contingency plans supplement the Emergency Operations Plan and are incorporated by reference, including the Operations and Maintenance Manual that outlines detailed procedures for the operation of equipment or facilities during or in response to an emergency.[38]

The SEP Contingency Plan was developed to ensure that wastewater facilities remain in, or are rapidly returned to operation, in the event of an emergency. The plan includes emergency response operating procedures for power failures, equipment failures, treatment plant security, spills and discharges of chemicals or sewage.[39]

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[35] CAL FIRE, *Draft Fire Hazard Severity Zones in Local Responsibility Area, San Francisco County*, October 5, 2007.
[36] Wu Yee Children's Services, Center Based Care, 2016. Available online at http://www.wuyee.org/center-based-care. Accessed January 13, 2017.
[37] CCSF Emergency Management Program, *City and County of San Francisco Emergency Response Plan,* 2010.
[38] Metcalf&Eddy/AECOM, *SFPUC Wastewater Enterprise Emergency Operations Plan*, May 2008.
[39] SFPUC, Program Management Consultant, *Contingency Plan, Southeast Water Pollution Control Plant as required by NPDES Permit No. CA0037664, Regional Water Board Resolution 74-10*, August 2013.

4.17.2 Regulatory Framework

4.17.2.1 Federal Regulations

In California, federal regulations pertaining to the use and management of hazardous materials and wastes are largely enforced through state and local regulations. Relevant state and local regulations are discussed below.

4.17.2.2 State Regulations

Asbestos-Containing Materials

Section 19827.5 of the California Health and Safety Code, adopted in January 1991, requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations (Part 61 of Title 40 of the Code of Federal Regulations) regarding hazardous air pollutants in the Bay Area, including asbestos. The BAAQMD is vested by the California legislature with authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and implements the California regulatory requirements through Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing).

In accordance with Regulation 11, Rule 2, the BAAQMD must be notified 10 days in advance of any proposed demolition or abatement work that would involve removal of asbestos-containing materials. Notification includes the names and addresses of operations and persons responsible; description and location of the structure to be demolished/altered including size, age, and prior use, and the approximate amount of friable asbestos; scheduled starting and completion dates of demolition or abatement; nature of planned work and methods to be employed; procedures to be employed to meet BAAQMD requirements; and the name and location of the waste disposal site to be used. The BAAQMD randomly inspects asbestos removal operations. In addition, the BAAQMD will inspect any removal operation that is the subject of a complaint.

Rule 11, Regulation 2 requires a survey of any building planned for demolition to identify asbestos-containing materials that may be present. If asbestos-containing materials are identified, they must be removed prior to demolition or alteration activities. During renovation, regulated asbestos-containing materials must also be removed prior to any operations that would cover the asbestos materials, making them inaccessible. During removal activities, the contractor must implement controls to ensure that there are no visible asbestos emissions to the outside air. The contractor can use methods such as wetting exposed asbestos-containing materials or providing exhaust controls to prevent asbestos emissions to the outside air. The structure being abated must also be isolated by containment barriers during removal operations, and a negative air pressure must be maintained within the containment barrier. The BAAQMD periodically inspects asbestos removal operations and will typically inspect removal operations when a complaint has been received.

Contractors who conduct asbestos-related work activities (including abatement) in buildings and structures must follow state regulations where the work would involve 100 square feet or more of asbestos-containing material.[40] Specifically, under CCR Title 8 Section 341.6, the California Occupational Safety and Health Administration (Cal/OSHA) must be notified of asbestos-related work activities to be carried out. Contractors must be licensed as an Asbestos Qualified Contractor by the Contractors Licensing Board of the State of California and registered as such with Cal/OSHA. Section 1529 regulates asbestos exposure in construction work. In addition, a one-time report of the use of carcinogens must be made to Cal/OSHA under CCR Title 8 Chapter 4 Section 5203. The owner of the property where abatement is to occur must have a Hazardous Waste Generator Number assigned by and registered with DTSC. The contractor and hauler of the material are required to file a Hazardous Waste Manifest that details the hauling of the material from the site and its disposal.

Naturally Occurring Asbestos

In 2001, the CARB adopted the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations in areas of serpentine and other ultramafic rocks, which became effective in July 2002.[41] The ATCM protects public health and the environment by requiring the use of best available dust mitigation measures to prevent the off-site migration of asbestos-containing dust from road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas of ultramafic rock, serpentine, or asbestos. The BAAQMD implements the Asbestos ATCM. In accordance with the Asbestos ATCM, asbestos-containing material is defined as any material that has an asbestos content of 0.25 percent or greater (California Code of Regulations Title 17, Division 3, Chapter 1, Subchapter 7.5, Section 93105[i][9]). The Asbestos ATCM does not apply to the project because no soil containing greater than 0.25 percent asbestos would be excavated or otherwise disturbed during construction at the project site or during grading to prepare the staging areas on Port property at Piers 94 and 96 and the Pier 94 Backlands.[42]

Lead in Construction Standard

Cal/OSHA's Lead in Construction Standard[43] requires project proponents to develop and implement a lead compliance plan when lead-based paint would be disturbed during construction. The plan must describe activities that could emit lead, methods for complying with the standard, safe work practices, and a plan to protect workers from exposure to lead during construction activities. Cal/OSHA requires 24-hour notification if more than 100 square feet of lead-based paint would be disturbed.

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[40] CCR 8 Sections 1529 and 341.6-341.14.
[41] CCR 17 Section 93105.
[42] Biosolids Digester Facilities Project (BDFP) Consultant Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.
[43] CCR 8 Section 1532.1

Screening Levels for Hazardous Materials in Soil or Groundwater

The RWQCB ESLs and DTSC SLs provide conservative screening levels for over 100 chemicals commonly found at sites with contaminated soil or groundwater. These screening levels are intended to help expedite the identification and evaluation of potential environmental concerns at contaminated sites for various site uses (e.g., commercial/industrial uses, residential uses, and construction workers). ESLs and DTSC SLs are not regulatory action levels or cleanup standards.

ESLs and DTSC SLs have been established for both residential and commercial/industrial land uses. Residential screening levels are the most restrictive; soil with chemical concentrations below these levels generally would not require remediation and would be suitable for unrestricted uses if disposed of off-site. Commercial/industrial screening levels are generally higher than residential screening levels because they are based on potential worker exposure to hazardous materials in the soil (and these are generally less than residential exposures).

Hazardous Waste Classification

California and Federal Hazardous Waste Criteria

In accordance with Title 22 of CCR Section 66261.20 et seq., excavated soil is classified as a hazardous waste if it exhibits the characteristics of ignitability, corrosivity, reactivity, and/or toxicity. A waste is considered toxic in accordance with CCR 22 Section 66261.24 if it contains:

- Total concentrations of certain substances at concentrations greater than the total threshold limit concentrations (TTLCs);
- Soluble concentrations greater than the soluble threshold limit concentrations (STLCs);
- Soluble concentrations of certain substances greater than federal toxicity regulatory levels using the Toxic Characteristic Leaching Procedure (TCLP); or
- Specified carcinogenic substances at a single or combined concentration of 0.001 percent.

State and federal regulations consider waste to be hazardous if the soluble concentration exceeds the federal regulatory level as determined by the TCLP. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to exceed the regulatory level in the extract. A waste is also considered hazardous under state regulations if the soluble contaminant concentration exceeds the STLC as determined by the waste extraction test method. Because the waste extraction test analysis is performed using a 10-to-1 dilution of the sample, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract. A waste may also be classified as toxic if testing indicates toxicity greater than the specified criteria. Soil that is not classified as a hazardous waste can be accepted at a Class II or Class III designated landfill, depending on the waste acceptance criteria for the specific landfill. This soil may also be reused on-site or sent to a recycling facility for reuse at another site if it is non-hazardous and meets specific criteria. Typically, the concentrations of all chemicals should be less than RWQCB Residential ESLs for unrestricted on-site reuse or off-site recycling. On-site reuse is subject to approval by the SFDPH.

Asbestos-Containing Materials

Asbestos wastes transported off-site are considered a hazardous waste in accordance with the California Code of Regulations, Title 22, Division 4.5, Chapter 11, Article 3, Section 66261.24 if the asbestos is friable and the asbestos content is 1 percent or greater.

Lead-Based Paint

Demolition debris that is painted with intact lead-based paint may or may not be considered hazardous waste. In order for the entire item to be hazardous, the lead concentration in the paint <u>and</u> the painted item (i.e., door, beam, etc.) must exceed a TTLC of 1000 mg/kg of lead, STLC of 5 mg/L, or TCLP of 5 mg/L in accordance with the California Code of Regulations, Title 22, Division 4.5, Chapter 11, Section 66261.24. In most cases, the lead concentration from the intact paint alone will not exceed hazardous lead levels for both the item and the intact paint; therefore, most materials with intact lead-based paint can be disposed of through normal practices at a regularly licensed waste facility. If the paint has been separated from the building material (e.g., chemically or physically removed), then the paint waste should be evaluated independently from the building material to determine if it is hazardous and to identify the proper management practice.

Polychlorinated Biphenyls (PCBs)

In California, PCB wastes are regulated as hazardous waste under the California Code of Regulations, Title 22, Division 4.5, Chapter 11, Section 66261.24 if the PCB concentration exceeds TTLC of 50 mg/kg or the soluble concentration exceeds the STLC of 5 parts mg/L.

California Universal Waste Regulations

Universal wastes are hazardous wastes that are widely produced by households and many different types of businesses. Televisions, computers and other electronic devices as well as batteries, fluorescent lamps, mercury thermostats and other mercury-containing equipment, and other items are classified as universal wastes. California's Universal Waste Rule, included the California Code of Regulations, Title 22, Division 4.5, Chapter 11, Section 66261.9, allows individuals and businesses to transport, handle, and recycle these wastes in a manner that differs from the requirements for most hazardous wastes. The universal waste regulations contain specific requirements for universal waste handlers and transporters, as well as the destination facilities. These requirements for managing universal wastes are more relaxed than other hazardous materials management regulations and were adopted to ensure that the universal wastes are managed safely and are not disposed of in the trash.

California Fire Code

The California Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following specific design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a non-combustible partition, or appropriate distance separation.
- Spill control in all storage, handling, and dispensing areas.
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code, Article 79, includes specific requirements for the safe storage and handling of flammable and combustible liquids. Specific requirements address fire protection; prevention and assessment of unauthorized discharges; labeling and signage; protection from sources of ignition; specifications for piping, valving, and fittings; maintenance of aboveground tanks; requirements for storage vessels, vaults, and overfill protection; and requirements for dispensing, using, mixing, and handling of flammable and combustible liquids.

The California Fire Code, Chapter 33, specifies safety requirements to prevent fires during construction and demolition. This chapter specifies precautions that must be taken to protect against fire and procedures for management of flammable and combustible liquids as well as flammable gasses during construction. Requirements for providing a water supply for fire protection, portable fire extinguishers, and a means of egress are also addressed.

Transportation of Hazardous Materials and Wastes

The transport of hazardous materials is regulated by the California Highway Patrol under the California Vehicle Code. Specific requirements related to hazardous materials are specified in the California Code of Regulations, Title 13, Division 2, Chapter 6. These regulations specify container types, packaging requirements, and placarding requirements as well as requirements for licensing and training for truck operators and chemical handlers.

Regulatory requirements for the transport of hazardous wastes in California are specified in CCR 22 Division 4.5 Chapters 13 and 29. In accordance with these regulations, all hazardous waste transporters must have identification numbers, which are used to identify the hazardous waste handler and to track the waste from its point of origin to its final disposal disposition. This number, issued by either the USEPA or DTSC, depends on whether the waste is classified as hazardous by federal regulations or only under California regulations. Hazardous waste transporters must also comply with the California Vehicle Code, California Highway Patrol regulations (CCR Title 13). A hazardous waste manifest is required for transport of hazardous wastes. The hazardous waste manifest documents the legal transport and disposal of the waste, and is signed by the generator and transporter(s) of the waste as well as the disposal facility. California regulations specify specific cleanup actions that must be taken by a hazardous waste transporter in the event of a discharge or spill, and for the safe packaging and transport of hazardous wastes.

4.17.2.3 Local Regulations

Articles 21, 22, and 22A of the San Francisco Health Code, administered by the SFDPH, implement state and federal hazardous material and hazardous waste regulations and impose specific local requirements. These articles address the handling of hazardous materials, hazardous wastes, and facility closure as well as requirements for investigation of sites that may contain hazardous materials in the soil or groundwater. Article 22B of the San Francisco Health Code addresses dust control during construction activities. These regulatory requirements are discussed below.

San Francisco General Plan

The Community Safety Element of the *San Francisco General Plan* includes Objective 1, which requires the City to "reduce structural and non-structural hazards to life safety and minimize property damage resulting from future disasters." The Community Safety Element contains the following relevant hazardous materials policies in support of this objective:

> ***Policy 1.23*****:** Enforce state and local codes that regulate the use, storage, and transportation of hazardous materials in order to prevent, contain, and effectively respond to accidental releases.
>
> ***Policy 1.24*****:** Educate public about hazardous materials procedures including transport, storage, and disposal.

The Community Safety Element of the *San Francisco General Plan* also includes Objective 3, which requires the City to "establish strategies to address the immediate effects of a disaster." The Community Safety Element contains the following relevant emergency response and hazardous materials policies in support of this objective:

> ***Policy 3.1*****:** After an emergency, follow the mandates of the Emergency Response Plan and Citywide Earthquake Response Plan.
>
> ***Policy 3.12*****:** Address hazardous material and other spills by requiring appropriate cleanup by property owners per local, state, and federal environmental laws.

San Francisco Health Code Article 21 – Hazardous Materials

Article 21 of the San Francisco Health Code provides for safe handling of hazardous materials in the city. It requires any person or business that handles, sells, stores, or otherwise uses specified quantities of hazardous materials to keep a current certificate of registration and to implement a Hazardous Materials Business Plan (HMBP). A special permit is required for USTs. To close a facility (including USTs), a closure plan must be prepared that identifies how the need for future maintenance of the facility will be eliminated, how the threat to the environmental and public health and safety will be eliminated, and how all hazardous materials in the facility will be removed and appropriately disposed of. This article also requires that soil from the UST excavation, and possibly the groundwater, be sampled. Upon completion of closure, a final report documenting UST removal activities and any residual contamination left in place must be submitted to the City. Upon approval of this report, the City would issue a Certificate of

Completion. If a release were indicated, the site owner would be required to assess the extent of any contamination and conduct a site remediation, as needed, in compliance with the SFDPH Local Oversight Program requirements. The SFDPH could approve abandonment of the UST in place if removal were infeasible.

The project would increase the use of hazardous materials and generation of hazardous wastes at the SEP and would include the removal of USTs at the Asphalt Plant as well as closure of hazardous materials handling facilities at the Central Shops and Asphalt Plant.

San Francisco Health Code Article 22 – Hazardous Wastes

Article 22 of the San Francisco Health Code provides for safe handling of hazardous wastes in the city. It authorizes the SFDPH to implement the state hazardous waste regulations, including authority to conduct inspections and document compliance.

The project would generate hazardous wastes as a result of building demolition and excavation of soil containing hazardous materials.

San Francisco Health Code Article 22A – Site Investigation and Remediation

Article 22A of the San Francisco Health Code (also known as the Maher Ordinance) applies to any site identified within the Maher area as well as any site that is on a lot either currently or previously either zoned for or permitted for industrial use; within 150 feet of any of the elevated portions of U.S. Highway 101, Interstate 80, or Interstate 280; on a lot known or suspected by the SFDPH to contain hazardous substances in the soil and/or groundwater; or on a lot known or suspected by the SFDPH to contain or to be within 100 feet of a UST. Article 22A requires that a project sponsor evaluate the potential for site contamination and level of exposure risk associated with the project. Where such analysis reveals the presence of hazardous substances in excess of state or federal standards, the project sponsor is required to submit a site mitigation plan to the SFDPH or other appropriate state or federal agency(ies), and to remediate any site contamination in accordance with an approved site mitigation plan prior to the issuance of any building permit. For departments, boards, commissions and agencies of the CCSF such as the SFPUC that authorize construction or improvements on land under their jurisdiction where no building or grading permit is required, the ordinance requires that protocols be developed between that entity and the SFDPH that will achieve the environmental and public health and safety goals of Article 22A.

The project site is within a designated Maher area.

San Francisco Health Code Article 22B – Construction Dust Requirements

In July 2008, the City adopted amendments to San Francisco Health Code Article 22B and San Francisco Building Code Section 106.A.3.2.6, which collectively constitute the Construction Dust Control Ordinance. The ordinance requires that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection (DBI). For projects over one-half acre, the Construction Dust Control Ordinance requires that the SFPUC submit a Dust Control Plan for approval by the SFDPH. For construction on CCSF property, all agencies of the CCSF that authorize construction or improvements must adopt rules and regulations to ensure that the same dust control requirements that are set forth in the Construction Dust Control Ordinance are followed if no building, excavation, grading, foundation, or other permit needs to be obtained under the San Francisco Building Code. The Directors of the SFDPH and DBI assist the departments, boards, commission and agencies to ensure that these requirements are met.

The Construction Dust Control Ordinance requires the site owners and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director of Public Health. Dust suppression activities may include watering of all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code.

The project would disturb soil throughout much of the 12.9-acre site and up to 12 acres at the staging areas located on Port property (Piers 94 and 96 and the Pier 94 Backlands).

San Francisco Building Code – Lead-Based Paint Regulations

Work that could result in disturbance of lead paint must comply with Section 3426 of the San Francisco Building Code, Work Practices for Lead-Based Paint on Pre-1979 Buildings and Steel Structures. Where there is any work that may disturb or remove lead paint on the exterior of any building built prior to 1979, Section 3426 requires specific notification[44] and work standards, and identifies prohibited work methods and penalties.

Section 3426 applies to the exterior of all buildings or steel structures on which original construction was completed prior to 1979 (which are assumed to have lead-based paint on their surfaces, unless demonstrated otherwise through laboratory analysis), and to the interior of residential buildings, hotels, and childcare centers. The ordinance contains performance standards, including establishment of containment barriers, at least as effective at protecting human health and the environment as those in the U.S. Department of Housing and Urban Development Guidelines (the most recent Guidelines for Evaluation and Control of Lead-Based Paint Hazards) and identifies prohibited practices that may not be used in disturbances or removal of lead-based paint. Any person performing work subject to the ordinance shall, to the maximum extent possible, protect the ground from contamination during exterior work; protect floors and other horizontal surfaces from work debris during interior work; and make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers

[44] The required notices are similar to those commonly placed on residential and other buildings in San Francisco that are undergoing re-painting. These notices are generally affixed to a drape that covers all or portions of a building and are a required part of the Section 3425 notification procedure.

during the course of the work. Cleanup standards require the removal of visible work debris, including the use of a High Efficiency Particulate Air Filter vacuum following interior work.

The ordinance also includes notification requirements. Prior to the commencement of work, the responsible party must provide written notice to the Director of DBI of the address and location of the project; the scope of work, including specific location within the site; methods and tools to be used; the approximate age of the structure; anticipated job start and completion dates for the work; whether the building is residential or non-residential, owner-occupied or rental property; the dates by which the responsible party has fulfilled or will fulfill any tenant or adjacent property notification requirements; and the name, address, telephone number, and pager number of the party who will perform the work. Section 3426 contains provisions regarding inspection and sampling for compliance by DBI, as well as enforcement, and describes penalties for non-compliance with the requirements of the ordinance.

San Francisco Fire Code

The 2010 San Francisco Fire Code incorporates by reference the California Code of Regulations, Title 24, Part 9 (California Fire Code) including appendices adopted by the state. In addition, it incorporates portions of the 2009 International Fire Code that are not part of the California Fire Code.

4.17.2.4 Industry Standards

National Fire Protection Association (NFPA) Standard 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, establishes minimum requirements to protect wastewater treatment facilities and associated collection systems against fire and explosion hazards. The standard applies to combined sewers, pumping stations, and wastewater treatment plants as well as other wastewater handling facilities. NFPA Standard 820 provides requirements specific to various wastewater treatment processes including both the liquid and solids treatment processes. General requirements are also included for fire and explosion prevention and protection, materials of construction, ventilation, and administrative controls.

4.17.3 Impacts and Mitigation Measures

4.17.3.1 Significance Criteria

The project would have a significant impact related to hazards and hazardous materials if the project were to:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 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;

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- 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, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving fire.

Due to the nature of the project, there would be no impact related to the following topics for the reasons described below:

- ***Safety Hazards from Public Airports.*** There is no public airport or public use airport within two miles of the project site. The nearest airport, San Francisco International Airport, is located approximately eight miles south of the project site. Therefore, this criterion is not applicable.
- ***Safety Hazards from Private Airstrips.*** There is no private airstrip in the project site vicinity. Therefore, this criterion is not applicable.

4.17.3.2 Approach to Analysis

Construction Impacts

Construction-related effects are impacts that could occur during construction activities. The analysis first identifies uses of and potential exposure to hazardous materials during construction, such as a release of hazardous materials used during construction activities, the potential for exposure to hazardous building materials during building demolition, the potential for exposure to hazardous materials in soil and groundwater, and use of extremely hazardous materials or emission of TACs within one-quarter mile of a school. The impact analysis assumes that all construction would be completed in compliance with applicable regulations, including BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing); Section 3426 of the San Francisco Building Code; the Cal/OSHA Lead in Construction Standard; Articles 22A and 22B of the San Francisco Health Code; Articles 4.1 and 4.2 of the San Francisco Public Works Code; the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ; and any other relevant hazardous waste disposal laws. If the project would implement the requirements of these regulations, the impact is considered less than significant. The impact analysis regarding potential impairment of emergency response assumes implementation of the Traffic Control Plan described in Chapter 2, *Project Description*.

Operational Impacts

Operational effects of the project would be related to the routine use, transport, and disposal of hazardous materials; the emission of TACs within one-quarter mile of a school; risk of fire; and interference with emergency response. The impact analysis assumes that the use of hazardous materials and management of hazardous wastes would occur in compliance with applicable regulations, including Articles 21 and 22 of the San Francisco Health Code. The impact analysis for the emission of TACs within one-quarter mile of a school assesses whether the emissions would result in adverse health effects on the staff and students at the school. If so, the analysis assumes implementation of mitigation measures specified in Section 4.8, Air Quality. The impact analysis for interference with emergency response and fire risks assumes implementation of the SFPUC Emergency Operations Plan, the San Francisco Fire Code, and NPFA standards.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list based approach and summarizes past, present, and reasonably foreseeable future cumulative projects in the vicinity of the project that could contribute to a cumulative impact; please refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects in the vicinity of the BDFP.

The geographic scope of potential hazards and hazardous materials impacts is restricted to the project site and immediate vicinity because related risks are relatively localized or even site-specific. Similar to the analysis for project impacts, the cumulative impact analysis assumes that construction and operation of other projects in the immediate vicinity would also be completed in compliance with applicable regulations, including BAAQMD Regulation 11, Rule 2; Cal/OSHA's Lead in Construction Standard; Articles 21, 22, 22A, and 22B of the San Francisco Health Code; Articles 4.1 and 4.2 of the San Francisco Public Works Code; the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities; and the San Francisco Fire Code. The analysis considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the immediate vicinity, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.17.3.3 Impact Evaluation

Construction and Operational Impacts

Impact HZ-1: Project construction and operation would not result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant)

Construction Impacts

Project construction would require the use of routine hazardous materials such as fuels, lubricants, and solvents for construction vehicles and equipment. Without adequate management, the storage and use of hazardous materials at the project site and off-site staging areas could result in the accidental release of small quantities of hazardous materials, which could result in exposures for construction workers, degradation of soils, and/or entrainment in stormwater runoff affecting the downstream environment.

As discussed under Impact HY-1 in Section 4.16, Hydrology and Water Quality, grading and excavation at the project site and any of the staging areas would be subject to Article 4.2 of the San Francisco Public Works Code (Section 146). For construction uses at the off-site staging areas at the Pier 94 Backlands, Pier 94, and Pier 96, which are not within the area serviced by the combined sewer system, the construction activities would also be subject to the State Water Resources Control Board (SWRCB) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ if preparation of the staging areas would disturb more than one acre of land.

Article 4.2 requires implementation of an Erosion and Sediment Control Plan for projects that disturb more than 5,000 square feet of land, and the Construction General Stormwater Permit requires implementation of a Stormwater Pollution Prevention Plan (SWPPP) for projects that disturb one or more acres of land. Article 4.2 provides that for projects subject to both regulatory requirements, the SWPPP may be prepared in lieu of the Erosion and Sediment Control Plan. These plans would include best management practices to minimize the risk of a hazardous materials release during construction activities. The best management practices would include protection measures for the temporary on-site storage of fuel and other hazardous materials used during construction, including requirements for secondary containment and berming to prevent any release from reaching an adjacent waterway or stormwater collection system. All equipment and materials storage would be routinely inspected for leaks, and records would be maintained for documenting compliance with the storage and handling of hazardous materials. As the administering agency, the SFPUC would review and approve the plans prior to implementation, and would conduct periodic inspections to ensure compliance with the plans.

Regarding transport, the project would be required to comply with the regulations of the California Highway Patrol related to the transportation of hazardous materials. With implementation of the approved controls discussed above, subject to approval and inspection by the City, and compliance with hazardous materials transportation regulations, the potential for releases of hazardous construction materials during construction to result in a significant hazard to the public or the environment would be ***less than significant***.

Operational Impacts

As described in Chapter 2, *Project Description*, Table 2-9, operation of the project would increase the use of several chemicals at the SEP, including polymer for thickening and dewatering of biosolids, ferric chloride for struvite control, and diesel for a backup generator. The BDFP would also use relatively small quantities of sulfuric acid and potassium permanganate in the odor control systems, antiscalant and sodium hypochlorite (similar to bleach) for the Digestion Cooling Tower, sodium sulfite for the boiler system, and propane gas for turbine startup. None of these materials is considered extremely hazardous. These materials would be stored in appropriate containers with spill containment systems, within proposed buildings and handled in accordance with regulations for the safe storage and handling of hazardous materials.

The SFPUC would continue to comply with the City's hazardous materials handling requirements specified in Article 21 of the San Francisco Health Code. In accordance with this article, the SFPUC's HMBP for the SEP that is on file with the SFDPH would be revised to reflect the increased quantities of hazardous materials used. The HMBP includes chemical inventories, a program for reducing the use of hazardous materials and generation of hazardous wastes, site layouts, a program and implementation plan for training all new employees and annual training for all employees, and emergency response procedures and plans that provide for safe handling of hazardous materials, and also allows emergency responders to safely respond to a chemical emergency at the facility, if one were to occur. Any hazardous wastes produced would be managed in accordance with Articles 21 and 22 of the San Francisco Health Code.

Compliance with the San Francisco Health Code, which incorporates state and federal requirements, would minimize potential exposure of site personnel and the public to accidental releases of hazardous materials or waste and would also protect against a potential release that could cause environmental contamination. In addition, transportation of hazardous materials is well regulated by the California Highway Patrol and the California Department of Transportation, as discussed in Section 4.17.2.2, State Regulations, and operational transport of hazardous materials would be subject to these regulations. Therefore, with compliance with applicable hazardous materials regulations, the potential impacts related to the routine use, transport, and disposal of hazardous materials during operation of the BDFP would be ***less than significant***.

Mitigation: None required.

Impact HZ-2: Project construction and operation would not result in reasonably foreseeable conditions involving the release of hazardous building materials to the environment. (Less than Significant)

Construction Impacts

As described in Section 4.17.1.5, the BDFP would demolish structures that, because of their age, are likely to contain hazardous building materials, including asbestos-containing materials and lead-based paint. Electrical equipment may contain PCBs, while fluorescent light ballasts may contain PCBs or DEHP, and fluorescent light tubes would contain mercury vapors. Prior to demolition, the SFPUC would perform surveys to identify the presence of these materials in buildings to be demolished. During building demolition, workers and the public could be exposed to hazardous building materials if they were not abated prior to demolition. However, as discussed below and in Section 4.17.2, Regulatory Framework, there is a well-established regulatory framework for the abatement of hazardous building materials, and impacts related to exposure to these materials would be less than significant with compliance with regulatory requirements.

Asbestos-Containing Materials

In accordance with BAAQMD Rule 11, Regulation 2 (discussed in Section 4.17.2.2, State Regulations), the SFPUC would be required to retain a qualified contractor to conduct a survey to identify asbestos-containing materials in any building planned for demolition. If asbestos-containing materials are identified, the SFPUC would retain a qualified asbestos removal contractor certified as such by the Contractors Licensing Board of the State of California to remove the regulated materials prior to demolition activities. During removal activities, the contractor would implement controls to ensure that there are no visible asbestos emissions to the outside air. Such measures may include methods such as wetting exposed asbestos-containing materials or providing exhaust controls to prevent asbestos emissions to the outside air; and constructing a containment barrier around the building and maintaining negative air pressure within the containment barrier. The removal activities would be conducted in accordance with the state regulations contained in the California Code of Regulations, Title 8, Section 1529 and Sections 341.6 through 341.17. As the owner of the property, the SFPUC would be responsible for disposal of the asbestos-containing materials at a permitted disposal facility under the SFPUC's Hazardous Waste Generator Number. The contractor and hauler of the material would be required to file a Hazardous Waste Manifest that details the hauling of the material from the project site to the disposal site.

Implementation of the required procedures in accordance with the legal requirements described above would ensure that any potential impacts due the presence of asbestos-containing materials in any of the structures to be demolished would be ***less than significant***.

Lead-Based Paint

Disturbance of building and equipment components that include lead-based paint during demolition could result in exposure of workers and the public to lead. However, demolition activities would be subject to Section 3426 of the San Francisco Building Code and the Cal/OSHA Lead in Construction Standard (CCR 8 Section 1532.1), which are described in Section 4.17.2.2, State Regulations, and Section 4.17.2.3, Local Regulations.

Because the three Central Shops buildings were constructed in 1959, Building 870 at the SEP was constructed in 1952, the buildings at 1550 Evans were constructed in 1978, and underground structures at the former Asphalt Plant site were constructed in 1954, demolition of these structures would be subject to Section 3426 of the San Francisco Building Code. This section of the building code requires specific notifications and work standards, and identifies prohibited work methods and penalties. In accordance with this regulation, the SFPUC's contractor would be required to protect the ground from contamination and make all reasonable efforts to prevent migration of lead paint contaminants beyond containment barriers during the course of the work.

Lead-based paint continues to be used in some industrial applications. Demolition of the water pump station and electrical substation constructed at the SEP in the early 1980s along with demolition of the industrial equipment within all of the structures could encounter lead-based paint. These demolition activities would be subject to the requirements of the Lead in Construction Standard as well, which would require the SFPUC's contractor to develop and implement a lead compliance plan that describes activities that could emit lead, methods used to comply with the standard, safe work practices, and measures to protect workers from exposure to lead during construction activities.

Implementation of procedures required by Section 3426 of the San Francisco Building Code and the Lead in Construction Standard as part of the project would ensure that potential impacts of demolition of structures with lead-based paint would be ***less than significant***.

Other Hazardous Building Materials

Other hazardous building materials that could be present within the structures to be demolished include electrical transformers that could contain PCBs, fluorescent light ballasts that could contain PCBs or DEHP, and fluorescent light tubes that could contain mercury vapors, some of which would be classified as universal wastes under California law. Because electrical transformers that contain PCBs, fluorescent light ballasts that contain PCBs or DEHP, fluorescent light tubes, and any universal wastes encountered during demolition would be removed and disposed of in accordance with the established regulatory framework described in Section 4.17.2.2, State Regulations (under the heading "Hazardous Waste Classification"), impacts related to exposure to other hazardous building materials during demolition activities would be ***less than significant.***

Operational Impacts

Operation of the BDFP would not require the demolition of any structures with asbestos-containing materials or lead-based paint. Removal of any universal wastes such as fluorescent light tubes would continue to comply with applicable laws and regulations. Therefore, impacts related to encountering hazardous building materials during operation would be ***less than significant.***

Mitigation: None required.

Impact HZ-3: Project construction and operation would not release hazardous emissions or handle acutely hazardous materials, substances, or waste within one- quarter mile of an existing or proposed school. (Less than Significant)

Section 15186 of the California Environmental Quality Act (CEQA) Guidelines requires that the environmental document for projects that are located within one-quarter mile of a school address the use of extremely hazardous materials and emission of hazardous air emissions. The Wu Yee South East Child Development Center is located within the Southeast Community Facility, within one-quarter mile of the project site. The State of California defines acutely hazardous materials as extremely hazardous materials in Section 25532(i)(2) of the Health and Safety Code. Construction of the project would use only common hazardous materials such as paints, solvents, cements, adhesives, and petroleum products (such as asphalt, oil, and fuel). None of these materials is considered extremely hazardous. In addition, the project would not use any extremely hazardous materials during operation.

Hazardous air emissions include the TACs that are listed in Title 17 of the California Code of Regulations, Section 93000 (refer to Section 4.8, Air Quality). Impacts associated with TAC emissions are addressed in Impact AQ-3 in Section 4.8, Air Quality. Thus, impacts related to hazardous emissions or the use of extremely hazardous materials within one- quarter mile of a school would be ***less than significant***.

Mitigation: None required.

Impact HZ-4: The project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, project construction and operation would not result in a significant hazard to the public or the environment under reasonably foreseeable conditions. (Less than Significant)

Construction Impacts

As discussed in Section 4.17.1, Setting, the SEP, Central Shops, and Asphalt Plant are included on a list of hazardous materials sites compiled by one or more government regulatory agencies. The SFPUC has conducted investigations to evaluate soil and groundwater conditions at these sites and detected several chemicals at concentrations exceeding ESLs or DTSC SLs for commercial/industrial workers. Because project construction would include the excavation of approximately 190,000 cubic yards of soil at the project site, the public could be exposed to hazardous materials in the soil as a result of airborne dust or entrainment in stormwater runoff from the project site unless proper precautions are implemented. In addition, excavation at the project site would require dewatering of groundwater encountered in the excavated areas, and groundwater sampling has indicated that the concentrations of some chemicals in the groundwater exceed the SFPUC batch wastewater discharge requirements specified in Article 4.1 of the San Francisco Public Works Code (described in Section 4.16, Hydrology and Water Quality). At some locations, concentrations of metals in soil (predominantly lead) exceed state or federal hazardous waste criteria and the soil would require disposal at appropriate permitted hazardous waste landfill.

Similarly, soil samples from the Pier 94 Backlands area contained lead at concentrations greater than the ESL, and some portions of the soil would be classified as a California hazardous waste based on total or soluble lead concentrations. At staging areas, shallow excavations would be needed for installation of water and sewer lines and demolition of the existing buildings at 1550 Evans Avenue, but the volume of soil requiring excavation has not been quantified. Due to the limited depth of excavation in the staging areas, no groundwater dewatering would be required during construction.

In addition, the public could be exposed to hazardous materials during removal of subsurface structures at the Asphalt Plant site, including the four concrete underground tanks that formerly contained asphaltic materials as well as during removal of the hazardous materials handling facilities at the Central Shops prior to building demolition. Workers could be exposed to hazardous materials in soil vapors as a result of placement of construction trailers within the regulated landfill at Pier 94 and the Pier 94 Backlands.

Without proper controls, these construction activities could expose the public or the environment to hazardous materials. However, as discussed below, there is a robust set of regulatory requirements for site investigation and cleanup, discharge of dewatering effluent, and closure of facilities that handled hazardous materials as well as for the transportation and disposal of hazardous wastes. In addition, the WDRs for the regulated landfill include specific requirements for construction within the regulated landfill. Implementation of these requirements would ensure that the excavation, handling, and disposal of soil and groundwater containing hazardous materials during construction would not result in a significant hazard to the public or the environment.

Soil Excavation

Maher Ordinance Requirements. The BDFP and staging areas are all located within a Maher area. Therefore, the project is subject to Article 22A of the San Francisco Health Code (the Maher Ordinance), which is administered and overseen by the SFDPH. The project site and staging areas are in different stages of compliance with the Maher Ordinance. Therefore, this impact analysis describes the overall requirements of the ordinance, then discusses that status of compliance for the project site, adjacent staging areas, and staging areas on Port property.

The Maher Ordinance requires the SFPUC to retain the services of a qualified professional to prepare a Phase I Environmental Site Assessment that meets the requirements of San Francisco Health Code Section 22A.6. The Phase I Environmental Site Assessment would determine the potential for hazardous materials to be present in the soil and groundwater and the level of exposure risk associated with the project. Based on that information, the SFPUC may be required to conduct soil and/or groundwater sampling and analysis. Where such analysis reveals the presence of hazardous substances in excess of state or federal standards, the SFPUC would be required to submit a site mitigation plan to SFDPH or other appropriate state or federal agency(ies), and to remediate any site contamination in accordance with an approved site mitigation plan prior to the issuance of any building permit. For departments, boards, commissions and agencies of the CCSF that authorize construction or improvements on land under their jurisdiction where no building or grading permit is required, the ordinance requires protocols be developed between that entity and SFDPH that will achieve the environmental and public health and safety goals of Article 22A.

In accordance with these requirements, the SFPUC conducted soil and groundwater sampling to characterize the concentration of chemicals in the soil and groundwater at the project site.[45] In August 2016, the SFDPH approved the subsurface investigation report summarizing this sampling, and required SFPUC to prepare and implement a site mitigation plan, dust control plan, and health and safety plan for construction.[46] In their approval of the subsurface investigation report, the SFDPH also required submittal of a final report at the completion of the project. All of these required plans and reports would be prepared prior to construction and would be subject to review and approval by the SFDPH.

The Maher Ordinance would also require the SFPUC to conduct a Phase I Environmental Site Assessment, and possibly soil and groundwater sampling, at any off-site staging areas that would involve the excavation of more than 50 cubic yards of soil (i.e., potentially the Pier 94 Backlands or 1550 Evans Avenue). If indicated on the basis of the sampling in all areas, the SFPUC would prepare a site mitigation plan for SFDPH review and would implement the site mitigation plan during construction.

San Francisco Dust Control Ordinance. The public would also be protected against exposure to chemicals in airborne dust because the contractor would be required to implement the requirements of Article 22B of the San Francisco Health Code, San Francisco's Dust Control Ordinance. In accordance with the Dust Control Ordinance, the SFPUC's construction contractor(s) would submit a Dust Control Plan for approval by the SFDPH for construction activities at the SEP. The plan would describe dust suppression activities to prevent dust from becoming airborne, dust monitoring requirements, action levels that would require implementation of corrective actions, and corrective actions that would be implemented if action levels are exceeded or a dust complaint is received. The requirements of Article 22B are discussed in more detail in Section 4.8, Air Quality. Although construction activities at Pier 94, Pier 96, and the Pier 94 Backlands would likely disturb more than one-half acre of land, the SFPUC may obtain a waiver from the SFDPH because there are no sensitive receptors within 1,000 feet of these proposed staging areas.

Construction Site Runoff Control Requirements. Implementation of stormwater BMPs in accordance with the Erosion Control Plan prepared under Article 4.2 of the San Francisco Public Works Code, Section 147, and the SWPPP prepared for construction activities on Port property would ensure that hazardous materials are not transported off-site in stormwater during project construction. These regulatory requirements are discussed above under Impact HZ-1.

45 BDFP Consulting Team, Environmental Site Investigation Report for San Francisco Department of Public Health Article 22A Compliance, May 2016.

46 San Francisco Department of Public Health, Subsurface Investigation Approval, Sewer Improvement Project, Southeast Water Pollution Control Plant, Biosolids Digester Facility, 1800 & 1801 Jerrold Avenue and 750 & 1150 Phelps Street, San Francisco, CA. EHB-SAM No. -SMED: 1293. August 29, 2016.

With implementation of the regulatory requirements discussed above, soil excavation would result in a ***less-than-significant*** impact related to construction within areas of soil containing hazardous materials.

Dewatering

During BDFP construction, groundwater produced by dewatering would be discharged to the combined sewer system in compliance with Article 4.1 of the San Francisco Public Works Code, as supplemented by Order No. 158170. Section 4.16, Hydrology and Water Quality, describes these regulatory requirements. In accordance with Article 4.1, groundwater produced during the limited dewatering would be pumped to baker tanks or other containment, tested, and treated to ensure compliance with the discharge limitations of Article 4.1 of the San Francisco Public Works Code and Order No. 158170. Treatment could include methods such as using settling tanks to remove sediments, filters to remove suspended solids, and other methods to meet chemical-specific discharge limitations. The chemical-specific treatment method used would depend on the chemicals that exceed the specified discharge limitation but could include methods such as filtration or activated carbon treatment to reduce chemical concentrations as necessary to meet permit requirements prior to discharge. Impacts related to discharge of the groundwater produced during construction-related dewatering would be ***less than significant*** with compliance with the specified discharge limitations.

Closure of USTs and Hazardous Materials Handling Facilities

Construction of the BDFP would include closure of USTs at the Asphalt Plant and other hazardous materials handling facilities at the Central Shops in accordance with Article 21 of the San Francisco Health Code. This article would require a closure plan identifying how the need for future maintenance of the facility will be eliminated, how the threat to the environment and public health and safety will be eliminated, and how all hazardous materials in the facility will be removed and appropriately disposed of. For USTs, the closure plan would identify appropriate requirements for disposition of any remaining hazardous materials in the tank and the tank itself. The closure plan would be submitted to the SFDPH for approval prior to removal of the UST. Soil from the UST excavation, and possibly the groundwater, would also be sampled in accordance with Article 21. Upon completion of closure, a release or contamination report would be submitted to the SFDPH if a release were indicated on the basis of visual observations or sampling, and a final report documenting tank removal activities and any residual contamination left in place would be submitted to the SFDPH. Upon approval of this report, the SFDPH would issue a Certificate of Completion. If a release were indicated, the SFPUC would be required to submit a corrective action plan, including a community health and safety plan, to the SFDPH and the RWQCB, and remediation would be required in accordance with federal, state, and local regulations. Alternatively, the UST could be abandoned in place if removal were infeasible. Implementation of the measures required in accordance with Article 21 of the San Francisco Health Code would ensure that hazardous materials impacts associated with UST removal and closure would be ***less than significant***.

Transportation and Disposal of Hazardous Materials

The environmental investigation report estimates that the following volumes of soil would require disposal as hazardous waste:

- 4,000 cubic yards of soil from the Boneyard would be classified as a California hazardous waste. (This is the location of the proposed Biosolids Dewatering Facility.)
- 2,000 cubic yards from the Asphalt Plant would be classified as a California hazardous waste.
- 1,000 cubic yards from the Central Shops would be classified as a federal hazardous waste.
- 38,000 cubic yards from the Central Shops would be classified as a California hazardous waste.

As the generator of the hazardous wastes, the SFPUC would be required to follow state and federal regulations for manifesting wastes, using licensed waste haulers, and disposing the materials at a permitted disposal or recycling facility. These requirements are described in Section 4.17.2.2, State Regulations (under the heading "Transportation of Hazardous Materials and Wastes"). Compliance with these regulatory requirements would ensure that impacts related to disposal of hazardous wastes would be ***less than significant***.

Possible Siting of Construction Offices on a Regulated Landfill

Portions of the Pier 94 Backlands and Pier 94 are located on a listed landfill site that received unauthorized municipal debris in the 1960s and 1970s (see Figure 4.17-1). This area is regulated as a solid waste disposal site under a WDR issued by the RWQCB. During BDFP construction, temporary trailers and restroom facilities would be located at the staging areas at the Pier 94 Backlands and on Pier 94 and/or Pier 96 for approximately five years. Portions of the Pier 94 and Pier 94 Backlands staging areas include this regulated landfill. Because the future availability and configuration of staging areas at the Port are not currently known, it is possible that construction offices would be located on top of the regulated landfill area, potentially exposing building occupants to harmful landfill gases such as methane and VOCs. Compliance with WDRs would require RWQCB approval of any changes to site development, including the proposed staging area uses. The RWQCB would require additional studies to confirm the potential presence of landfill gases and any landfill gas controls needed to ensure the safe occupancy of proposed structures. With compliance with the WDR requirements, the potential adverse effects of landfill gases on construction workers at the staging area would be ***less than significant***.

Operational Impacts

As discussed in Section 4.17.1, Setting (under the heading "Environmental Investigations and Underground Tank Removals"), soil at the SEP, Asphalt Plant, and Central Shops contains several chemicals at concentrations exceeding commercial/industrial ESLs. Therefore, without proper precautions, future site workers could potentially experience adverse health effects if exposed to the soil for a sufficient period of time and off-site migration of soil from the project site could potentially cause adverse environmental effects. However, construction of the BDFP would remove much of the soil, and the construction of new structures and paved areas under the BDFP would preclude future contact with and off-site migration of any soil remaining in place once the project is constructed. Further, operation of the project would not require additional earthmoving activities that could generate dust.

The site mitigation plan prepared in accordance with the Maher Ordinance, described above, would specify any measures the SFPUC would put in place to manage future contact with the site soil during normal operations and minimize the off-site migration of soil. The SFDPH would review the site mitigation plan and ensure that the proposed measures are protective of future site occupants and the environment. Therefore, operation of the BDFP on a listed hazardous materials site would not cause a significant hazard to the public or the environment. This impact would be ***less than significant***.

Mitigation: None required.

Impact HZ-5: Project construction and operation would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

Construction Impacts

BDFP construction would not conflict with the San Francisco Emergency Response Plan, because the plan does not designate emergency response or evacuation routes, and the project would not otherwise impair implementation of this plan. However, the project would be considered to have a significant impact on implementation of emergency response or emergency evacuation if construction activities interfered with emergency response vehicle travel or restricted access to critical facilities such as hospitals or fire stations. Project construction would close Jerrold Avenue between Phelps Street and the Caltrain tracks to through traffic for approximately five years, which could impede emergency response traffic. However, as discussed in Chapter 2, *Project Description*, the SFPUC or its contractor would prepare and implement a Traffic Control Plan that conforms to the San Francisco Municipal Transportation Agency's (SFMTA) Blue Book. The Traffic Control Plan would require coordination of construction with facility owners or administrators of police and fire stations (including all fire protection agencies), transit stations, hospitals, and schools. In accordance with the plan, facility owners or operators would be notified in advance of the timing, location, and duration of construction activities and the locations of detours and lane closures. Emergency service vehicles would be given priority for access. As a result, implementation of the Traffic Control Plan would provide adequate access such that project construction would not interfere with emergency response or evacuation activities and this impact would be ***less than significant***.

Operational Impacts

Upon completion of construction, Jerrold Avenue would be reopened to through traffic and detours around the site would no longer be needed. Quint Street would remain closed. The SEP operations would continue to conform to the SFPUC Wastewater Enterprise Emergency

Operations Plan, which would be modified to include the BDFP.[47] The Emergency Operations Plan outlines the Wastewater Enterprise's overall emergency preparedness measures, emergency management organization, emergency operations, roles, and responsibilities. Contingency plans supplement the Emergency Operations Plan and are incorporated by reference; these include the Operations and Maintenance Manual, which outlines detailed procedures for the operation of equipment or facilities during or in response to an emergency. The SEP Contingency Plan was developed to ensure that wastewater facilities remain in operation, or are rapidly returned to operation, in the event of an emergency. The plan includes emergency response operating procedures for power failures, equipment failures, treatment plant security, spills, and discharges of chemicals or sewage.[48] In addition, the SEP HMBP contains procedures for emergency response to hazardous materials incidents. The SEP Contingency Plan and HMBP would be updated, as required by law, to include the BDFP operations and to ensure that the new biosolids treatment facilities and operations would not impair implementation of the SEP emergency response plans. Because operation of the BDFP would conform to the modified SEP Contingency Plan and HMBP, this impact would be ***less than significant***.

Mitigation: None required.

Impact HZ-6: Project construction and operation would not result in a significant risk of loss, injury, or death involving fire. (Less than Significant)

Construction Impacts

As discussed in Impact HZ-1, construction activities would involve the use of flammable materials such as fuels, oils, solvents, and compressed gases for welding. If handled or stored improperly, these materials could ignite and result in fire. However, the construction contractor would comply with the California Fire Code requirements for Fire Safety during Construction and Demolition,[49] including requirements for storage of flammables, accumulation of debris, site work such as welding, and operation of motor vehicles. In addition, these regulations require the preparation of a fire prevention program in cooperation with the fire chief, training of responsible personnel in the use of fire protection equipment, maintenance of fire protection equipment and water supply for fire protection on-site, and vehicle access for firefighting on the project site. Further, as described above and in Section 4.6, Transportation and Circulation, emergency vehicles would have local access during construction for fire response. Compliance with these regulations would ensure that impacts related to the risk of fires during construction would be ***less than significant***.

[47] Metcalf&Eddy/AECOM, *SFPUC Wastewater Enterprise Emergency Operations Plan*, May 2008.
[48] SFPUC, Program Management Consultant, *Contingency Plan, Southeast Water Pollution Control Plant as required by NPDES Permit No. CA0037664, Regional Water Board Resolution 74-10*, August 2013.
[49] California Fire Code, Chapter 33.

Operational Impacts

Project facilities would be designed and constructed in accordance with fire safety requirements set forth in the California Fire Code and industry standards. As discussed in Chapter 2, *Project Description*, the BDFP would store and use flammable materials, including a 50-foot-diameter steel digester gas storage tank, a 1,000-gallon diesel fuel storage tank for the backup generator, and two propane gas cylinders for turbine startup fuel. California Fire Code Article 79 includes specific requirements for the safe storage of flammable and combustible liquids. In addition, the NFPA develops and publishes consensus codes and standards intended to minimize the possibility and effects of fire and other risks. While not regulations, these codes and standards are industry-accepted guidelines for construction and fire protection systems. NFPA Standard 820 establishes the standard for fire protection in wastewater treatment and collection facilities, which would be applicable to the Digester Gas Storage facility. Additional relevant codes include a fuel gas code, a standard on explosion prevention systems, and standards for fire prevention during welding and other construction activities.

The project would increase the generation of digester gas, a flammable gas, from the current production rate of 1.3 million cubic feet per year to 2 million cubic feet per year by 2045. The proposed digester gas storage system would be similar to the system operated at the Oceanside Water Pollution Control Plant, which is a gasholder submerged in a steel water tank. This arrangement pressurizes the digester gas handling system and provides a buffer between the anaerobic digesters and digester gas use facilities. The tank would be equipped so that increases in digester gas pressure would automatically trigger the waste gas burners and combust the digester gas until the pressure in the system has been reduced. This storage system and all of the biosolids handling facilities would be constructed in accordance with NFPA Standard 820, which specifies ventilation requirements for wastewater treatment facilities that generate digester gas. Implementation of this standard would ensure that explosive vapors do not accumulate at dangerous levels. Implementation of these requirements and other measures to prevent and protect against fire and explosion hazards in accordance with NFPA Standard 820 would ensure that project operations would not result in a significant risk of loss, injury, or death involving fire or explosions and this impact would be ***less than significant.***

Mitigation: None required.

Cumulative Impacts

Impact C-HZ-1: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative hazards or hazardous materials impacts. (Less than Significant)

Hazardous materials impacts related to the project could result from using hazardous materials, constructing and operating the project within soil and groundwater containing hazardous materials, and demolishing structures that contain hazardous building materials. In addition, the project could result in hazards related to emergency response impairment and fires.

Table 4.1-1 and Figure 4.1-1 summarize cumulative projects in the vicinity of the BDFP. Those projects that are at or adjacent to the SEP, involve construction, but have not yet been constructed or completed construction include the following (project sponsor is shown in parentheses following project name):

- Southeast Plant Headworks Replacement Project (SFPUC)
- SEP Existing Digester Gas Handling Improvements (SFPUC)
- SEP Building 521 Replacement/ 522 Disinfection Upgrade (SFPUC)
- SEP Power Feed and Primary Switchgear Upgrades (SFPUC)
- SEP Primary/Secondary Clarifier Upgrades (SFPUC)
- SEP Seismic Reliability and Condition Assessment Improvements (SFPUC)
- SEP Oxygen Generation Plant Replacement (SFPUC)
- SEP Repair and Replacement (R&R) Projects (SFPUC)
- Demolition of the Existing SEP Digesters and Southside Renovation Project (SFPUC)
- Eastside Recycled Water Project (SFPUC)
- Central Shops Relocation and Land Reuse (SFPUC)
- Southeast Greenhouses Demolition (SFPUC)
- Central Bayside System Improvement Project (SFPUC)
- Quint Street Lead Track (Port of San Francisco and Federal Railroad Administration)
- Peninsula Corridor Electrification Project (Caltrain Peninsula Corridor Joint Powers Board)

As shown, most of these projects are proposed by the SFPUC and would involve construction within and adjacent to the SEP property. In addition, the Pier 94 Backlands Improvement Project could involve industrial uses such as the production of biofuel.

Routine Use or Release of Hazardous Materials

As discussed above, compliance with applicable regulatory requirements would ensure that the project would not result in any significant impacts with respect to hazards or hazardous materials (Impacts HZ-1 through HZ-3). All cumulative development in San Francisco would be subject to the same regulatory framework as the project for the transport, use, and storage of hazardous materials. Compliance with these existing regulations would ensure that any cumulative impacts related to exposure to hazardous materials would be ***less than significant.***

Hazardous Emissions near Schools

As discussed in Impact HZ-3, the project would not use extremely hazardous materials so it would not contribute to any cumulative impacts related to the use of these materials. While the project would emit DPM, a TAC, cumulative impacts related to these emissions are discussed in Section 4.8, Air Quality (Impact C-AQ-2).

Interference with an Adopted Emergency Response Plan or Emergency Evacuation Plan

As discussed in Impact HZ-5, the project would not conflict with the City's Emergency Response Plan. Project construction would close Jerrold Avenue to through traffic for the five-year duration of construction. However, as discussed in Chapter 2, *Project Description*, the SFPUC or its contractor would prepare and implement a Traffic Control Plan that conforms to the SFMTA's Blue Book. The Traffic Control Plan would require coordination of construction with facility owners or administrators of police and fire stations (including all fire protection agencies), transit stations, hospitals, and schools. In accordance with the plan, facility owners or operators would be notified in advance of the timing, location, and duration of construction activities and the locations of detours and lane closures. Emergency service vehicles would be given priority for access. Implementation of the Traffic Control Plan would provide adequate access such that project construction, in combination with other construction projects, would not interfere with emergency response or evacuation activities and this cumulative impact would be ***less than significant***.

Project operations would increase truck trips by an estimated four trips per day, which is expected to have a negligible effect on local area roadways; therefore, operation of the project in combination with other cumulative projects would not cause a significant cumulative hazards impact related to the impairment of emergency response.

Risk of Fires

Construction of the project and other cumulative projects would likely use similar flammable materials, such as fuels, lubricants, and welding materials, that would contribute to a risk of fires. Because each project in the cumulative scenario would be required to comply with the San Francisco Fire Code as would the project (see Impact HZ-6), the cumulative impact of BDFP construction in combination with other planned projects would be ***less than significant***.

Project operation would result in a less-than-significant impact related to loss and damage from fires due to handling of digester gas, storage of diesel fuel, and flammable gas. The only other project in the cumulative scenario that would handle or store digester gas is the Pier 90-94 Backlands, which may include industrial uses such as biofuel production. However, this site is more than one-half mile from the BDFP and would not contribute to fire risk at the project site. Other projects may possibly store fuels and propane gas, and those projects would be subject to the San Francisco Fire Code and HMBP regulations that would reduce the potential for fires, as well as be required to provide information to the San Francisco Fire Department about the types of flammable materials stored on-site to facilitate appropriate fire response. Therefore, the cumulative impact of BDFP operation in combination with other planned projects on fire risk would be ***less than significant.***

Mitigation: None required.

4.18 Mineral Resources, Energy Resources, and Water Use

This section identifies and evaluates impacts related to mineral resources, energy resources, and water use that could result from implementation of the Biosolids Digester Facilities Project (BDFP or project). The section discusses existing energy, fuel, and water use at the Southeast Water Pollution Control Plant (Southeast Plant or SEP) and examines whether implementation of the project would result in the consumption of large amounts of energy, fuel, or water, or would use such resources in a wasteful manner. This section also addresses the project's impacts on mineral resources. Mitigation measures are identified to avoid or reduce adverse impacts, as appropriate. The project's impacts on water supply are addressed in Section 4.12, Utilities and Service Systems. The project's impacts related to energy usage as it may affect climate change, including measures to reduce greenhouse gas emissions, are discussed in Section 4.9, Greenhouse Gas Emissions.

4.18.1 Setting

4.18.1.1 California's Energy Use and Supply

Forms of energy generated or obtained within California include electricity from fossil fuel, hydroelectric, nuclear, and renewable sources; natural gas; and petroleum. California's energy system provides 71 percent of the electricity, 10 percent of the natural gas, and 38 percent of the petroleum consumed in or used for the state. The rest of the state's energy is imported, and includes electricity from the Pacific Northwest (8 percent, primarily hydroelectric) and the Southwest (21 percent, primarily coal and nuclear); natural gas purchases from Canada (22 percent), the Rocky Mountain states (23 percent), and the Southwest (42 percent); and crude oil imported from Alaska (12 percent) and foreign sources (50 percent).[1]

Electricity

Statewide Use and Supply

The production of electricity requires the consumption or conversion of energy resources such as water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in-state, 61.3 percent is generated by natural gas-fired power plants, 0.5 percent is generated by coal-fired power plants, 7.1 percent comes from large hydroelectric dams, and 8.6 percent comes from nuclear power plants. The remaining in-state total electricity production (22.5 percent) is supplied by renewable sources such as biomass, geothermal, small hydroelectricity, solar, and wind.[2]

On a per capita basis, Californians consume approximately 6,721 kilowatt-hours (kWh) of electricity annually, the lowest statewide per capita consumption in the country. In comparison,

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1 California Energy Commission, California's Major Sources of Energy, 2011.
2 California Energy Commission, Energy Almanac – Total Electricity System Power, *2014 Total System Power in Gigawatt Hours*, data as of June 30, 2016. Available online at http://energy.ca.gov/almanac/electricity_data/system_power/2014_total_system_power.html. Accessed on January 12, 2017.

the average annual U.S. per capita consumption is 12,146 kWh.[3] However, California's overall electricity consumption is second only to that of Texas.

Use and Supply within San Francisco

In 2014, electricity consumption in San Francisco was 5.8 billion kWh.[4] This use is forecast to grow at the rate of 1.3 percent per year to approximately 8 billion kWh per year by 2030.[5]

Electricity in San Francisco is primarily provided by three sources: the Pacific Gas and Electric Company (PG&E), the San Francisco Public Utilities Commission (SFPUC) Power Enterprise, and direct access providers (i.e., purchase of electric energy directly from energy generators or other suppliers). San Francisco receives 73 percent of its electricity from PG&E,[6] which also provides natural gas and electricity to most of Northern California. The PG&E power mix for 2014 was as follows: 24 percent natural gas, 21 percent nuclear, 27 percent eligible renewables (described below), 8 percent large hydroelectric, and 21 percent unspecified power.[7] The SFPUC is the municipal power utility that provides electrical services to all City and County of San Francisco (City) facilities, services, and customers, which include the following: San Francisco International Airport; San Francisco General Hospital; San Francisco Municipal Railway; police services, fire services, retail City tenants, residences, and businesses in the San Francisco Shipyard; and Treasure Island. The SFPUC provides approximately 16 percent of San Francisco's electricity from the Hetch Hetchy Power system or local renewable sources operated by the SFPUC Power Enterprise.[8] The Hetch Hetchy Power system is composed of three hydroelectric powerhouses with a combined total hydroelectric output of nearly 400 megawatts (MW).[9] This clean energy is transmitted to San Francisco along PG&E and City-owned transmission lines that traverse California from east to west. Within San Francisco, the SFPUC also generates over 10 MW of clean, renewable energy from San Francisco's 19 solar arrays and two digester gas cogeneration facilities. (See discussion below regarding cogeneration facilities at the SEP.) The Hetch Hetchy Power system comprises 98.8 percent of the power supply from the SFPUC Power Enterprise, while in-City renewable resources comprise 1.2 percent. Direct access to electricity providers was created as a result of California restructuring its electricity industry in 1998. Fewer than 800 customers in San Francisco use direct access, but they constitute about 11 percent of the total energy usage in San Francisco.[10]

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3 California Energy Commission, Energy Almanac – US Per Capita Electricity Use by State in 2010. Available online at http://www.energy.ca.gov/almanac/electricity_data/us_per_capita_electricity.html. Accessed on January 12, 2017.

4 California Energy Commission, Energy Consumption Data Management System, *2014 Electricity Consumption by County – San Francisco*, data as of March 14, 2016. Available online at http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed on January 12, 2017.

5 San Francisco Department of the Environment, *San Francisco Climate Action Strategy*, *2013 Update*, October 21, 2013.

6 San Francisco Department of the Environment, *San Francisco Climate Action Strategy*, *2013 Update*, October 21, 2013.

7 Pacific Gas and Electric Company (PG&E), *PG&E's 2014 Power Mix*, 2014. Available online at https://www.pge.com/includes/docs/pdfs/myhome/myaccount/explanationofbill/billinserts/11.15_PowerContent.pdf.

8 San Francisco Department of the Environment, *San Francisco Climate Action Strategy*, *2013 Update*, October 21, 2013.

9 San Francisco Water Power Sewer, *About the Power Enterprise*. Available online at http://www.sfwater.org/index.aspx?page=391. Accessed on March 14, 2016.

10 San Francisco Department of the Environment, *San Francisco Climate Action Strategy*, *2013 Update*, October 21, 2013.

Natural Gas

Natural gas is one of the two primary fuels that drive California's energy system. It is primarily used to generate electricity and for heating and cooling buildings and water. Natural gas has become an increasingly important source of energy since the state's power plants rely on this fuel. Combined, California's residential and commercial building sectors account for more than 40 percent of the total state natural gas usage.[11] At 56,000 cubic feet (approximately 58 million British thermal units [Btu]) per year, California's per capita natural gas consumption is lower than the national per capita average of 72,000 cubic feet (74 million Btu) per year.[12] California is second only to Texas in total statewide natural gas consumption. As with electricity, California's high statewide natural gas consumption results from the state's large population and its vigorous economy. Only 10 percent of the state's natural gas needs are met by in-state production. The state's natural gas is primarily supplied from the southwest and the Rocky Mountains, as well as imports from Canada.

In 2014, approximately 220 million therms (approximately 22 trillion Btu) of natural gas were used in San Francisco.[13] PG&E operates one of the largest natural gas distribution networks in the country, including 48,850 miles of natural gas transmission and distribution pipelines.[14] In all, PG&E delivers natural gas to approximately 4.3 million customer accounts in Northern and Central California, including San Francisco.

Transportation Fuels

California's transportation sector uses nearly 40 percent of the energy consumed in the state.[15] Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the California Energy Commission (CEC), the state relies on petroleum-based fuels for 96 percent of its transportation needs. Although California refines much of its oil reserves in the state (approximately 38 percent), most of the petroleum consumed is produced out of state (approximately 10 percent from Alaska) or is supplied by foreign sources (52 percent).[16] California experienced a 12 percent decrease in production between 2004 and 2014 as a result of several factors, including declining fuel reserves and economic and regulatory factors. Statewide, Californians used approximately 2.8 billion gallons of diesel and 14.7 billion gallons of gasoline in 2014.[17,18] Per capita consumption of

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[11] California Energy Commission, *Energy Almanac – Supply and Demand of Natural Gas in California*. Available online at http://www.energy.ca.gov/almanac/naturalgas_data/overview.html. Accessed on January 12, 2017.

[12] California Energy Commission, Energy Almanac – Average Per Capita Natural Gas Consumption by State in 2011. Accessed on March 14, 2016.

[13] California Energy Commission, Energy Consumption Data Management System, *2014 Gas Consumption by County – San Francisco*. Available online at http://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed on January 12, 2017.

[14] PG&E, Fast Facts, 2016. Available online at http://www.pge.com/en/about/company/profile/index.page. Accessed on August 8, 2016.

[15] California Energy Commission, *2013 Integrated Energy Policy Report*, CEC-100-2013-001-CMF.

[16] California Energy Commission, *Energy Almanac – Oil Supply Source to California Refineries*, 2016. Available online at http://www.energy.ca.gov/almanac/petroleum_data/statistics/crude_oil_receipts.html. Accessed on January 12, 2017.

[17] California State Board of Equalization, Taxable Diesel Gallons 10 Year Report, Net of Refunds.

[18] California State Board of Equalization, Net Taxable Gasoline Gallons, Including Aviation Gasoline.

petroleum products in transportation is expected to slow down with the increasing use of alternative fuels and improved fuel efficiency in vehicles.

Renewable and Alternative Energy

Renewable electricity generation sources provide a number of benefits. Such sources reduce the state's dependence on the use of imported fossil fuels (including natural gas), reduce the state's vulnerability to price fluctuations in energy markets, and serve to minimize greenhouse gas emissions. The CEC currently defines solar, geothermal, wind, biomass, and small-scale hydroelectric generation methods as renewable electricity sources. Compared to other utility providers in the state, PG&E's overall electricity generation portfolio contains a relatively high percentage of renewable sources. In 2014, PG&E generated 27 percent of its total electricity through renewable sources, including biomass, small hydroelectric, geothermal, and wind. Although development of renewable energy sources is generally beyond the scope of local development planning, individual development projects may include small-scale generation features, such as photovoltaics, that can be connected to, and supply supplementary electricity to, the primary power grid.

Commercially available alternative transportation fuels to gasoline and diesel include biodiesel, renewable diesel, ethanol, hydrogen, methanol, natural gas, and electricity.[19] Some of these fuels, such as natural gas, are cleaner-burning petroleum-based alternatives to gasoline and diesel. Other products, such as ethanol and renewable diesel, are non-petroleum fuels. Although some alternative fuels can be used in a traditional combustion motor, other alternatives, such as electricity, are based on alternative propulsion technologies. The California Air Resources Board is investigating a number of low-carbon fuel strategies.

In 2007, the CEC in partnership with the California Air Resources Board and other state, federal, and local agencies prepared the State Alternative Fuels Plan in accordance with Assembly Bill 1007. The plan identifies strategies to increase the use of alternative fuels to meet California's goals for reducing petroleum consumption, improving energy security, and increasing in-state production of biofuels. Subsequently, the State of California has implemented the Alternative and Renewable Fuel and Vehicle Technology Program (Assembly Bill 118). This program provides financial incentives for businesses, vehicle and technology manufacturers, workforce training partners, fleet owners, consumers, and academic institutions to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the State's climate change policy objectives.

[19] Biodiesel is a fuel produced from biological feedstock sources including fats, oils and greases. Biodiesel is chemically different from petroleum diesel and renewable diesel (which is chemically indistinguishable from petroleum diesel). Biodiesel is usually blended with petroleum diesel, such as the B20 biodiesel grade used in City fleets.

4.18.1.2 Existing Energy Demand and Supply at the SEP

The annual electricity demand of the existing solids treatment process at the SEP is estimated at 1 MW. This electricity demand is currently supplied by a combination of the following sources: electricity generated from digester gas at the existing cogeneration facility (0.66 MW), electricity from Hetch Hetchy hydropower (0.32 MW), and natural gas purchased from the state (0.02 MW). Electricity is provided to the SEP from Hetch Hetchy Power distributed through PG&E's distribution system. A small stream of natural gas is required for the cogeneration engine, and it is currently purchased from the State Department of General Services Natural Gas Services program and delivered through PG&E pipelines. Other energy demands at the existing solids treatment facilities include about 50 gallons of diesel per year for equipment testing and fuel use.

As indicated in Table 2-8 (in Chapter 2, *Project Description)*, the SEP digesters currently produce about 1.3 million cubic feet of digester gas per day. The digester gas provides fuel for boilers and a cogeneration facility on-site. An internal combustion engine at the cogeneration facility converts the digester gas to electricity. The boilers are fueled by digester gas to supply heat. The cogeneration facility can produce about 2 MW of electricity for on-site use, providing about one-third of the overall SEP's energy needs through electricity and heating. Heat from cogeneration maintains the digesters at the necessary temperatures to biologically treat the biosolids. Currently, any excess digester gas that cannot be converted to energy is routinely combusted via waste gas burners.

4.18.1.3 Existing Water Use at the SEP

As described in Chapter 2, *Project Description*, the SEP currently uses supplies from the following three water sources for process and wash water: No. 1 water (potable water); No. 2 water (non-potable, chlorinated and filtered SEP secondary-treated effluent); and No. 3 water (non-potable, chlorinated SEP secondary-treated effluent). The type of water used in the treatment system depends on the process and required water quality. Current average water demand of potable water (No. 1 water) for the existing solids treatment process is approximately 0.04 million gallons per day (mgd), while the average total water demand (potable and non-potable) is approximately 1.3 mgd (refer to Table 2-6 in Chapter 2, *Project Description*). Currently, potable water use constitutes approximately 3 percent of the total water used for the existing solids treatment process.

4.18.1.4 Mineral Resources

Minerals are naturally occurring chemical elements or compounds, or groups of elements or compounds, that were not formed by organisms. Naturally occurring concentrations of minerals in the earth's crust are known as mineral deposits. Mineral resources are mineral deposits from which the economic extraction of a commodity (such as gold or copper) is currently potentially feasible. In addition to metallic minerals, materials used for construction (e.g., sand and aggregate), industrial and chemical processes (e.g., salt), and fuel (e.g., crude oil) are considered mineral resources in California.

In accordance with the Surface Mining and Reclamation Act (SMARA) of 1975, the California Department of Conservation, Division of Mines and Geology, currently known as the California Geological Survey, has mapped non-fuel mineral resources of the state to show where economically significant mineral deposits are either present or likely to occur based on the best available scientific data. These resources have been mapped using the California Mineral Land Classification System, which includes the following four Mineral Resource Zones (MRZs):

- ***MRZ-1.*** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- ***MRZ-2.*** Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- ***MRZ-3.*** Areas containing mineral deposits, the significance of which cannot be evaluated.
- ***MRZ-4.*** Areas where available information is inadequate for assignment to any other zone.

The project site and construction staging areas are mapped as MRZ-1.[20] There are no mines, mineral plants, oil, gas, or geothermal wells within the project area.[21]

4.18.2 Regulatory Framework

4.18.2.1 Federal Regulations

No federal regulations pertain to mineral resources or water use in the project area. Regulations related to energy use are described below.

National Energy Conservation Policy Act

The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. This act is the foundation of most federal energy requirements.

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 sets equipment energy efficiency standards and seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

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[20] Kohler-Antablin, S., *Generalized Mineral Land Classification Map of the South San Francisco Bay Production-Consumption Region*, 1996. Published by the California Department of Conservation Division of Mines and Geology.

[21] California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), District 6 Wells, posted February 2, 2016. Available online at http://www.conservation.ca.gov/dog/maps/Pages/GISMapping2.aspx. Accessed on March 25, 2016.

Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), signed in 2007, strengthens the key energy management goals for the federal government and sets more challenging goals than the Energy Policy Act of 2005. The energy reduction and environmental performance requirements of Executive Order 13423 were expanded upon in Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), signed in 2009.

4.18.2.2 State Regulations

California Energy Action Plan

The State of California's *2008 Energy Action Plan Update*[22] updates the *2005 Energy Action Plan II*,[23] which is the State's principal energy planning and policy document. The plan maintains the goals of the original *Energy Action Plan*, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. First-priority actions to address California's increasing energy demands are to promote energy efficiency, demand response (i.e., reducing customer energy usage during peak periods to address power system reliability and support the best use of energy infrastructure), and use of renewable power sources. To the extent that these strategies are unable to satisfy increasing energy and capacity needs, the plan supports clean and efficient fossil fuel-fired generation.

Title 24 - California Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings specified in Title 24, Part 6 of the California Code of Regulations were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Pursuant to state law[24], the CEC is required to adopt and implement energy efficiency standards for both residential and non-residential buildings. The CEC must also update the standards periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The CEC adopted its most recent update to the standards in 2013.[25] These updated standards are expected to achieve 25 percent more efficiency than previous standards for residential construction and 30 percent more for non-residential construction, offering builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

California Green Building Standards Code

As described in Section 4.9, Greenhouse Gas Emissions, the 2013 California Green Building Standards Code, as specified in Title 24, Part 11 of the California Code of Regulations, specifies building standards to improve public health, safety, and general welfare by enhancing the design

[22] California Energy Commission, *2008 Update Energy Action Plan*, February 2008.
[23] California Energy Commission, California Public Utilities Commission, *Energy Action Plan II*, September 21, 2005.
[24] Public Resources Code Sections 25402 and 25402.1.
[25] California Energy Commission, *Building Energy Efficiency Standards for Residential and Nonresidential Buildings*, May 2012. Available online at http://www.energy.ca.gov/2012publications/CEC-400-2012-004/CEC-400-2012-004-CMF-REV2.pdf.

and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices. The provisions of this code apply to the planning, design, operation, construction, replacement, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

California Water Code Chapter 1, General State Policy

Section 106.5 of the California Water Code declares the state's policy that no municipality shall acquire or hold any right to wastewater, or to use water for other than municipal purposes.

Surface Mining and Reclamation Act of 1975

SMARA of 1975 (Chapter 9, Division 2, Section 2710 et seq. of the Public Resources Code) requires the State Mining and Geology Board to adopt state policies for reclaiming mined lands and conserving mineral resources. Title 24 of the California Code of Regulations, Division 2, Chapter 8, Subchapter 1 contains these policies.

In accordance with SMARA, the State has established the California Mineral Land Classification System to help identify and protect mineral resources in areas that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and non-fluid mineral fuels.

4.18.2.3 Local Regulations

San Francisco General Plan

The Energy section of the Environmental Protection Element of the *San Francisco General Plan* provides the City and County of San Francisco with a comprehensive and pragmatic energy management program that helps promote a productive collaboration between municipal government and local residents by guiding both public and private decisions affecting the use of energy. San Francisco's Energy Policy was designed with four goals in mind: (l) increasing the efficiency with which energy is used locally, (2) diversifying the present balance of resource supplies to meet local energy needs, (3) fostering the economic development of energy management services and renewable energy systems, and (4) encouraging the active participation of members of the community to carry out this program. The Air Quality Element of the General Plan includes one objective pertaining to energy use, which links energy conservation and waste management to emissions reductions.

The Fresh Water section of the Environmental Protection Element of the *San Francisco General Plan* includes the following policy related to limiting wasteful use of water:

> ***Policy 6.1.*** Maintain a leak detection program to prevent the waste of fresh water.

Regarding mineral resources, the *San Francisco General Plan* does not identify any occurrences of locally important mineral resources in the project area.[26]

Sustainability Plan for City and County of San Francisco

The *Sustainability Plan for City and County of San Francisco*, adopted in 1997, contains a set of general goals and specific objectives and actions for San Francisco to ensure that the city's current energy and water use needs are met without sacrificing the ability of future generations to meet their own needs. The major energy goals expressed in the plan are to reduce overall power use by maximizing energy efficiency; to maintain an energy supply based on renewable, environmentally sound resources; to eliminate climate-changing and ozone-depleting emissions and toxic contaminants associated with energy production and use; and to base energy decisions on the goal of creating a sustainable society. The major water use goals expressed in the plan are to maximize reuse of wastewater, maximize water conservation, minimize water use and waste, and ensure a sustainable and adequate water supply.

Climate Action Plan for San Francisco, San Francisco Climate Action Strategy, and San Francisco Greenhouse Gas Reduction Strategy

Multiple San Francisco programs developed to reduce greenhouse gas emissions (discussed in detail in Section 4.9, Greenhouse Gas Emissions) contain energy conservation provisions. The *Climate Action Plan for San Francisco, Local Actions to Reduce Greenhouse Gas Emissions* outlines citywide actions to reduce GHGs in the energy, transportation, and solid waste sectors. Strategies of the Climate Action Plan include expanding residential and commercial recycling programs. The 2013 *San Francisco Climate Action Strategy* describes additional steps taken to increase energy efficiency in San Francisco.[27] The San Francisco *Strategies to Address Greenhouse Gas Emissions*[28] documents San Francisco programs designed to reduce greenhouse gas emissions; programs that address energy conservation and recycling include increasing the energy efficiency of new and existing buildings, implementing a green building strategy, adopting a zero waste strategy, and adopting a mandatory recycling and composting ordinance. Specific actions taken by the SFPUC to address climate change include managing an energy efficiency program for municipal buildings in San Francisco designed to reduce electricity use and natural gas consumption.

San Francisco Environment Code, Green Building Requirements

The San Francisco Environment Code sets green building requirements that apply to all new construction in San Francisco. As discussed in Section 4.9, Greenhouse Gas Emissions, Chapter 7 (Green Building Requirements) of the San Francisco Environment Code adopts the mandatory measures in the state green building code and requires documentation of compliance with either Leadership in Energy and Environmental Design (LEED®) or GreenPoint Rated standards. City

[26] City and County of San Francisco, *San Francisco General Plan, Environmental Protection Element*. Available online at http://sf-planning.org/ftp/General_Plan/I6_Environmental_Protection.htm. Accessed on March 28, 2016.
[27] San Francisco Department of Environment, *San Francisco Climate Action Strategy, 2013 Update,* October 2013.
[28] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November 2010, p. VIII-22. Available online at http://www.sf-planning.org/index.aspx?page=2627. Accessed on September 1, 2016.

departments must administer their construction projects in accordance with this chapter. Chapter 7 includes requirements for municipal projects related to LEED® certification, collection of recyclable and compostable materials, construction and demolition debris management, water conservation, energy-efficient lighting, and indoor environmental quality. In accordance with these requirements, fluorescent fixtures must meet certain efficiency of lumens per watt of electricity consumed and/or be controlled by an occupancy sensor, and exterior light fixtures must include an automatic timer to prevent lights from operating during daylight hours. Water closets (e.g., toilets and urinals), shower heads, and faucets must meet certain efficiency standards to meet the water conservation requirements of this code.

San Francisco Better Roof Requirements for Renewable Energy Facilities Ordinance

As described in Section 4.9, Greenhouse Gas Emissions, this ordinance requires projects like the BDFP (i.e., newly constructed buildings of non-residential occupancy meeting criteria related to size) to install solar photovoltaic systems and/or solar thermal systems in the solar zone.[29] The minimum total solar zone area[30] for a building must also meet certain size requirements. Refer to Section 4.9.2.3 in Section 4.9 for additional information.

San Francisco Green Building Code

The San Francisco Green Building Code (Green Building Code) consists of the California Green Building Standards Code as further amended by the City and County of San Francisco. The purpose of the Green Building Code is to minimize waste of energy, water, and other resources in the construction and operation of buildings. Provisions of the Green Building Code apply to planning, design, operation, construction, use and occupancy of newly constructed buildings in San Francisco.

San Francisco Environment Code, Construction and Demolition Debris Management

The requirements described below apply to the BDFP.

The San Francisco Environment Code, Section 708, mandates the reduction and recycling of construction and demolition debris generated at City-owned facilities. This section affects all construction and demolition projects implemented by City agencies, regardless of size, and requires that contractors on City projects divert at least 75 percent of construction and demolition debris from landfill disposal. The contractor is also prohibited from sending any construction or demolition debris to a landfill without receiving approval from the San Francisco Department of the Environment (SFDE).

Chapter 14 of the Environment Code also mandates the recycling of construction and demolition debris generated from both private and City-sponsored projects in San Francisco. This chapter affects all construction projects that would generate one cubic yard or more of construction and

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[29] The solar zone is located on the roof or overhang of a building, or on the roof or overhang of another structure within 250 feet of the building or on covered parking installed with the building project.

[30] California Title 24, Part 6, Section 110.10.

demolition debris and requires that all construction and demolition wastes be taken to a registered facility that is certified by the SFDE to receive these wastes. These facilities must recycle or reuse at least 65 percent of all construction waste received.

Recycling and reuse of materials (including construction and demolition debris) reduces the energy requirements associated with extraction and manufacturing of new and raw materials.

San Francisco Public Works Code, Article 21 – Restriction of Use of Potable Water for Soil Compaction and Dust Control Activities

Article 21 of the San Francisco Public Works Code prohibits the use of potable water supplies for soil compaction and dust control in conjunction with any construction or demolition project when alternatives (e.g., non-potable water) are available. (Refer to Section 4.12, Utilities and Service Systems, for additional information.)

San Francisco Water Efficient Irrigation Ordinance

The San Francisco Water Efficient Irrigation Ordinance (codified in the San Francisco Administrative Code, Chapter 63) establishes a framework for planning, designing, installing, maintaining, and managing water-efficient landscaping in new construction and rehabilitation projects. The ordinance encourages the use of climate-appropriate and local California native species, and establishes provisions for water management and the prevention of wasteful use of water in landscapes. Landscape areas affected include planted areas within buildings or structures, such as green roofs. To ensure that water is used efficiently without waste, the ordinance sets a Maximum Applied Water Allowance, using State-mandated formulas and accounting for local climatic conditions. This allowance may not be exceeded unless the landscaped area is irrigated with gray water or harvested rain water.

San Francisco Reclaimed Water Use Ordinance

As discussed in greater detail in Section 4.16, Hydrology and Water Quality, this ordinance requires property owners to install recycled water systems in certain new construction, modified, or remodel projects. The goal of the ordinance is to maximize the use of recycled water. Buildings and facilities that are within the designated recycled water use areas are required to use recycled water for all uses authorized by the State of California. Some of the common uses include irrigation, cooling, and/or toilet and urinal flushing. These systems must meet San Francisco Plumbing and Health Codes, which include specifications for pipe type, pipe separation, backflow prevention assemblies, water meters, and signage. The project site is within a designated recycled water use area,[31] and the total floor area of the proposed Solids Pretreatment Facility would be greater than 40,000 square feet. Thus, the Reclaimed Water Use Ordinance would apply to the project.

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[31] SFPUC, *Recycled Water Use*. Available online at http://sfwater.org/index.aspx?page=687. Accessed on January 26, 2016.

San Francisco Non-Potable Water Ordinance

As described in Section 4.16, Hydrology and Water Quality, this ordinance allows for the collection, treatment, and use of alternative water sources for non-potable applications. In October 2013, the CCSF amended the ordinance to allow water systems consisting of two or more buildings sharing non-potable water. The CCSF also amended the ordinance in July 2015, requiring new construction to use alternative water supplies for non-potable use.

4.18.3 Impacts and Mitigation Measures

4.18.3.1 Significance Criteria

The project would have a significant impact related to mineral or energy resources or water use if it were to:

- 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;
- 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; or
- Encourage activities that result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner.

Due to the nature of the project, there would be no impact related to the following topic(s) for the reasons described below:

- ***Result in the loss of availability of a known mineral resource or a locally important mineral resource.*** As indicated above in Section 4.18.1.4, the project site and construction staging areas do not contain substantial mineral resources or locally important mineral resource recovery sites. Consequently, the project would not change the availability of mineral resources; therefore, these significance criteria are not discussed further in this EIR.

4.18.3.2 Approach to Analysis

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the BDFP to result in a substantial increase in energy demand and/or wasteful use of fuel, water, or energy during project construction and project operations. The impact analysis is informed by Appendix F of the California Environmental Quality Act Guidelines.

Construction Impacts

The analysis uses a qualitative approach to discuss energy demand from construction activities and describes conservation measures that would minimize the use of fuel, water, and energy and ensure that they are not used in a wasteful manner.

Operational Impacts

To determine whether the project would use large amounts of energy, fuel, or water during operations, this analysis provides a quantitative overview of the energy and water that would be consumed during the operation of the project and compares it to existing energy and water use. The analysis also weighs the project's energy, fuel, and water efficiency features when considering the project's potential for wasteful consumption of these resources during long-term operations. It is assumed that, as part of the project, the SFPUC and its contractors would comply with existing laws and regulations applicable to the BDFP with respect to fuel, water, and energy use.

Cumulative Impacts

Section 4.1.3, Approach to Cumulative Impact Analysis and Cumulative Projects, describes the overall approach to the cumulative analysis for those topics using a list-based approach and summarizes reasonably foreseeable future projects in the vicinity of the project that could contribute to a cumulative impact; refer to Table 4.1-1 and Figure 4.1-1 for a description and location of potential cumulative projects in the vicinity of the BDFP.

The cumulative analysis for energy resources and water use uses a list-based approach to analyze the effects of the project in combination with other past, present, and probable future projects in the immediate vicinity. (Because the project would have no impact related to mineral resources, that topic is not addressed in the cumulative impact analysis.) Cumulative impacts during construction and operations are evaluated together because energy use during both construction and operations would be strongly influenced by State and local regulations that encourage energy, fuel, and water conservation, and would affect similar fuel, energy, and water resources. The cumulative impact analysis assumes that construction and operations of other projects in the geographical area, listed in Table 4.1-1, would be required to comply with the same regulatory requirements as the project, which would serve to avoid and reduce many impacts to less-than-significant levels on a project-by-project basis. The analysis then considers whether or not there would be a significant, adverse cumulative impact associated with project implementation in combination with past, present, and probable future projects in the geographical area, and if so, whether or not the project's incremental contribution to the cumulative impact would be considerable. Both conditions must apply in order for a project's contribution to cumulative effects to be deemed cumulatively considerable (significant). If so, then mitigation measures are identified to reduce the project's contribution to the extent feasible.

4.18.3.3 Impact Evaluation

Construction Impacts

Impact ME-1: Construction of the project would not result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner. (Less than Significant)

The BDFP would require construction of about 206,000 square feet of new structures. To accommodate the proposed facilities and construction staging, approximately 136,000 square feet of existing structures would be demolished, including buildings at the 1550 Evans Avenue staging area. Construction of BDFP facilities would take place over a period of about five years, from 2018 to 2023. During this period, fuel, water, and energy would be needed for the operation of equipment and vehicles to perform a variety of demolition and construction activities. Construction activities associated with the project would require the following sources of fuel, water, and energy:

- Diesel, for demolition, grading, and construction equipment, heavy-duty delivery trucks, and demolition debris and material hauling trucks
- Gasoline, to fuel construction worker commute vehicles
- Electricity, for operation of hand tools, air compressors, welding machines, mobile project offices, and security lighting
- Water, for dust control

In addition to direct construction-related energy consumption at the project site, energy would be consumed indirectly 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 use typically represents about one-quarter of total construction-related consumption, while indirect energy use typically represents about three-quarters of total construction-related energy consumption.[32]

Energy Use

The precise amount of construction-related energy demand cannot be predicted at this time. Although this usage would represent an irreversible consumption of finite fossil fuel energy resources, the energy consumption associated with construction would be temporary and would therefore not result in long-term depletion of local or regional energy resources. As indicated in Chapter 2, *Project Description*, all construction equipment would comply with the San Francisco Clean Construction Ordinance. Many of the requirements of the ordinance also reduce energy use by (for example) requiring use of more efficient equipment and alternative fuels (refer to Section 4.8.2.3 in Section 4.8, Air Quality, for more detail). The project would also be constructed in compliance with the Chapter 14 and Section 708 of the San Francisco Environment Code. All non-hazardous material removed from the project site and off-site staging areas, including concrete, metal, and green waste, would be recycled to the maximum extent feasible, consistent with the minimum diversion rates specified in Chapter 14 and Section 708 of the San Francisco Environment Code to reduce the amount of material disposed of in landfills. Recycling and reuse of materials would reduce the energy requirements associated with extraction and manufacturing of new and raw materials.

Therefore, project construction would not require excessive or wasteful use of energy, as fuel use would be consistent with current construction and manufacturing practices, energy standards that promote strategic planning, and building standards that reduce consumption of fossil fuels and enhance energy efficiency. Additionally, implementation of **Mitigation Measure AQ-1a**

[32] Hannon et al., *Energy and Labor in the Construction Sector, Science Magazine,* November 24, 1978.

described in Section 4.8, Air Quality, would further ensure that fuel energy consumed during construction activities would not be wasted. Excavated material would be used as backfill on-site where feasible, thereby minimizing fuel consumption associated with construction haul trucks and solid waste disposal. Because construction of the BDFP would not be expected to have a material effect on energy resources, or result in wasteful or unnecessary use of energy, energy consumption that would be associated with construction activities would be considered ***less than significant***.

Water Use

Construction activities associated with the project would use water over the entire five-year construction period. During construction, recycled water would be used for dust control on roads and streets consistent with San Francisco Public Works Code, Article 21 which would ensure that water is not used in a wasteful manner. Public Works Code, Article 21, restricts the use of potable water for soil compaction and dust control activities associated with any construction project in the City and requires that recycled water, well water, or groundwater be used. The SEP recycled water fill station on Quint Street directly adjacent to the project site provides disinfected recycled water for these uses. Therefore, project compliance with applicable ordinances would ensure that the project would not result in wasteful, inefficient, or unnecessary use of potable water during construction, and this impact would be ***less than significant***.

Mitigation: None required.

Operational Impacts

Impact ME-2: Operation of the project would not result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner. (Less than Significant)

Energy Use

Table 4.18-1 summarizes the existing and projected operational energy demand, and the existing and proposed energy supply sources. Current power demand for the existing solids treatment process is estimated to be 1 MW; with implementation of the BDFP, power demand is expected to increase to 4.4 MW by 2023 and 4.9 MW by 2045. The existing energy recovery facilities provide about 66 percent of the current power demand, with the remainder provided from Hetch Hetchy Power or purchased from the State. Under the project, while power demand is expected to increase, the BDFP facilities are designed to increase the power generation capabilities such that by 2023, the BDFP would supply 95 percent of its own power demands. By 2045, the BDFP would provide over 100 percent of its own power demands and the excess power would be available for use by other SEP facilities. The current use of Hetch Hetchy Power would be reduced from 0.32 to 0.2 MW by 2023, and to zero by 2045, at which point it would be used only for backup power, when necessary.

**TABLE 4.18-1
EXISTING AND PROJECTED ENERGY DEMAND
AND SUPPLY FOR BIOSOLIDS PROCESSING FACILITIES**

		Existing Biosolids Facilities	Proposed BDFP
Electricity			
Power Demand		1 MW (estimated)	4.4 MW (2023) 4.9 MW (2045)
Power Supply Sources[a]	Cogeneration – Digester gas	0.66 MW[b]	4.2 MW (2023) 5.2 MW (2045)
	Cogeneration – Natural Gas	0.02 MW[c]	0
	Hetch Hetchy Power through PG&E Grid	0.32 MW	0.2 MW (2023) 0 (2045)
	On-site Solar power	n/a	Unknown
TOTAL, Power Supply from All Sources		1 MW	4.4 MW (2023) 5.2 MW (2045, excess 0.3 MW to be made available to other SEP facilities)
Diesel[d]			
Diesel Demand		50 gallons/year[e]	5,250 gallons/year[f]
Diesel Supply Source		Regional diesel providers	Regional diesel providers

NOTES:

n/a = not applicable ; BDFP = Biosolids Digester Facilities Project; MW = megawatts

a Existing power supply based on 2014 cogeneration engine operating record.
b Currently, the cogeneration engine can generate up to 2 MW power. When engine output exceeds the solids treatment processdemand, the surplus power is used by liquid processes.
c The cogeneration engine consumes a small stream of natural gas.
d Includes only non-emergency use.
e Based on actual current use.
f Estimate based on the operation of a 1.5-MW standby power generator for a maximum 50 hours of operation per year at 100 percent load for maintenance and testing purposes, consistent with Bay Area Air Quality Management District (BAAQMD) permit requirements. Actual maintenance and testing hours are anticipated to be less (i.e., six hours annually).

SOURCE: San Francisco Public Utilities Commission (SFPUC), *Final BDFP Conceptual Engineering Report*, March 2016

As shown in Table 2-8 in Chapter 2, *Project Description*, the proposed BDFP facilities are projected to generate an average of 1.6 million cubic feet of digester gas per day when the BDFP becomes operational in 2023. As the total volume of solids treated by the BDFP increases over time with anticipated population growth, the amount of digester gas generated would also increase to an average of 2 million cubic feet per day by 2045. Digester gas generated by the proposed digesters would be used to produce steam (used to heat the thermal hydrolysis process [THP]) and power that would more than meet the BDFP operational power needs. The new Energy Recovery Facility would improve energy production efficiency compared to the existing facilities. The project also would include solar photovoltaics, which would supply part of the energy requirements of the SEP. Although the energy demand would increase almost five-fold with the implementation of the BDFP, long-term demand would be more than offset by additional power generated on-site, and the BDFP would eliminate use of natural gas and electricity from Hetch Hetchy hydropower for solids processing at the SEP. Excess energy produced by BDFP supply sources would be made available to other SEP facilities. The project's net increase in on-site generation of renewable energy would also increase the availability of renewable energy from hydropower for other municipal uses; overall, this would be a beneficial energy impact.

Energy Efficiency

New equipment installed as part of the proposed new solids treatment, odor control, energy recovery, and associated facilities of the BDFP would be more energy efficient than the existing equipment it would replace. In addition, several operational features of the BDFP would increase energy recovery and conservation. By 2045, the Energy Recovery Facility would produce enough electricity and enough high quality heat (steam) for the THP and other BDFP facilities so that under normal circumstances no additional fuel or steam supply would be needed for the BDFP. Use of the THP would make the solids more readily digestible and allow for better methane production during anaerobic digestion. In addition, the turbine would have a recuperator that would maximize the turbine efficiency by using exhaust heat to pre-heat the fuel stream.

The project would be consistent with all applicable regulations pertaining to energy efficiency and conservation associated with San Francisco Environment Code, Chapter 7, regarding Green Building Requirements for City buildings and their commissioning. All lighting would meet applicable requirements of Chapter 7 of the San Francisco Environment Code, which is consistent with California Code of Regulations Title 24, Part 6. Lighting needs of project buildings would be provided by light emitting diode fixtures, and structures would be constructed to meet or exceed Title 24 requirements for energy efficiency.

Energy monitoring proposed as part of the project would improve management of energy usage, variable frequency drives would be used for energy efficiency in driven equipment, and premium efficiency motors would be specified for use. Due to the nature of non-occupied infrastructure projects such as the BDFP, LEED® certification can be difficult to obtain because energy reduction credits identified for the certification tend to be oriented toward the characteristics of energy use in occupied buildings. As part of project design, however, the SFPUC would evaluate alternative technologies to increase energy efficiency consistent with applicable performance requirements of the San Francisco Building Code Green Building Ordinance and the San Francisco Environment Code. The operational energy demands of the project would not increase reliance on non-renewable resources, and implementation of the BDFP would not result in the use of large amounts of energy in a wasteful manner.

Fuel Use

As shown in Table 4.18-1, the existing solids treatment process currently uses a minimal amount of diesel fuel for miscellaneous purposes. As part of the proposed Energy Recovery Facility improvements, the BDFP would install one 1.5-MW standby power generator to provide an alternative source of electrical power in the event that the normal electrical power source fails. While the standby power generator is intended to be used only during emergencies, it would need to be operated routinely for testing and maintenance purposes. The generator would be subject to BAAQMD permit requirements, which require annual testing and maintenance of the engine, with a maximum of 50 hours of testing and maintenance use per year.[33] Assuming 50 hours per year of non-emergency use at 100 percent load, diesel usage for the proposed generator would be 5,250 gallons per year. This increase would not be considered excessive or wasteful use of diesel fuel as the standby generator is essential for the operational reliability of the BDFP and routine testing is a permit requirement. In addition, the unit would be required to undergo regular testing and maintenance consistent with the standards of National Fire Protection Association 110, which specifies installation, maintenance, operation, and testing requirements as they pertain to the performance of the emergency or standby power supply systems. As the proposed generator use would be consistent with BAAQMD requirements and the National Fire Protection Association standards, the increase in diesel fuel use under the BDFP would not be considered excessive or wasteful.

As described above in Impact ME-1, consistent with current City policy for the entire municipal fleet, all SFPUC diesel vehicles associated with BDFP operation would use renewable diesel. Use of renewable diesel during BDFP operations would increase the efficiency of fuel use compared to existing conditions. The number of daily truck trips required for biosolids cake hauling would increase from 7 to 10 truck trips per day under existing conditions to approximately 10 to 14 haul trips per day by 2045 (although this projected increase in haul trips is attributable to the projected increase in solids loading associated with anticipated population growth through 2045). This would incrementally increase diesel fuel use as the contractors hauling biosolids are not required to use renewable diesel and are assumed to use conventional diesel vehicles. (With the production of Class A biosolids, to the extent that market locations for biosolids were located closer than sites where biosolids are currently reused [described in Section 2.2.2 in Chapter 2, *Project Description*], diesel consumption per haul trip could be less than existing conditions.) This minimal increase would not be considered wasteful, and overall the BDFP operations would not result in the use of large amounts of fuel or use fuel in a wasteful manner. As a result, this impact would be less than significant.

Water Use

BDFP processes would increase overall water use compared to existing conditions for all water types, as shown in **Table 4.18-2**. The BDFP is being designed to maximize use of SEP recycled water and/or other non-potable water to the extent possible in its processes. Therefore, most (about 92 percent) of the project's water needs would be supplied by the No. 2 and No. 3 non-potable water systems, while about 8 percent would be associated with the No. 1 potable water system. The Water Supply Assessment prepared for the project indicates that estimated potable water (No. 1 water) demand would be 0.21 mgd, about a five-fold increase in demand compared to existing conditions.[34] However, the non-potable water would have the greatest demand increases, and to meet this demand, the project would maximize the beneficial reuse of treated effluent, which would have otherwise been discharged into the Bay.

[33] Based upon California Code of Regulations, Title 17, Section 93115.
[34] San Francisco Water Power Sewer, Water Supply Assessment for Biosolids Digester Facilities Project, February 16, 2017.

TABLE 4.18-2
EXISTING AND PROJECTED AVERAGE DAILY WATER DEMAND FOR BIOSOLIDS PROCESSING FACILITIES

	Existing Biosolids Facilities (mgd)	Proposed BDFP (mgd)	Net Change (mgd)
Potable Water (No. 1 Water)	0.04	0.21	0.16
Non-Potable, Chlorinated and Filtered Water (No. 2 Water)	0.17	2.30	2.13
Non-Potable and Chlorinated Water (No. 3 Water)	1.11	0.22	-0.89
TOTAL (No. 1 + No. 2 + No. 3)	1.32	2.73	1.40

NOTE:
BDFP = Biosolids Digester Facilities Project, mgd = million gallons per day

SOURCE: San Francisco Water Power Sewer, Water Supply Assessment for Biosolids Digester Facilities Project, February 16, 2017.

Nearly 100 percent of the projected increase in potable water demand is associated with processes that require water with low salinity; this would not be considered a wasteful use of potable water given the fundamental purpose of the solids treatment processes. Potable water use for solids processing could be further reduced in the future through use of disinfected tertiary-level treated recycled water.[35] The SFPUC would also design and construct all bathrooms in BDFP buildings with dual plumbing to allow for the use of recycled water if and when it becomes available in the future.

All new water closets and faucets installed under the project would comply with the San Francisco Building Code. Although LEED® standards for water conservation are oriented toward commercial, office, and residential facilities, and not non-occupied wastewater treatment buildings like the project facilities, LEED® Credit WE3.0 (30 percent reduction in indoor water use) would be the targeted goal for proposed administrative (occupied) buildings.

For outdoor water use, the project would comply with water conservation measures under the San Francisco Water Efficient Irrigation Ordinance. These requirements specify water efficiency and conservation measures for indoor and outdoor use, including establishing standards for low-flow plumbing fixtures and water efficiency standards for landscape irrigation. Irrigation water demand, which is currently met by potable water, is also assumed to be supplied by potable water under the project until the Eastside Recycled Water Project is online. The project would include mostly developed areas and use drought-tolerant plants, and irrigation water usage would comply with the Water Efficient Irrigation Ordinance. Therefore, the BDFP operations would not result in use of large amounts of potable water in a wasteful manner.

[35] The SFPUC proposes to implement the Eastside Recycled Water Project by 2030. The Eastside Recycled Water Project would produce disinfected tertiary treated recycled water for non-potable uses. Refer to Table 4.1-1 in Section 4.1 for more information on this project.

Summary of Impact ME-2

Operational energy use would not be considered wasteful since proposed BDFP facilities would increase energy generation, efficiency, and conservation and more than offset the increase in energy demand due to the project. Compliance with the requirements of the San Francisco Environment Code and other ordinances discussed above would ensure that the project would not result in inefficient, wasteful, or unnecessary use of fuel or water during operation. For these reasons, the project's operational impacts on fuel, water, and energy resources would be ***less than significant.***

Mitigation: None required.

Cumulative Impacts

Impact C-ME-1: The project, in combination with past, present, and probable future projects, would not encourage activities that result in the use of large amounts of fuel, water, or energy, or use such resources in a wasteful manner. (Less than Significant)

The geographic scope for the analysis of potential cumulative impacts related to energy, fuel, and water resources encompasses the BDFP area and the broader region, which generally would use the same fuel, water, and energy supply sources. All projects listed in Table 4.1-1 in Section 4.1, Overview, are considered in the cumulative impact analysis for both construction and operation.

Regarding construction-phase impacts related to energy and water use, all of the projects presented in Table 4.1-1 involve some level of construction. Several of the Projects (e.g., SEP Chemical Systems Relocation and Facilities Upgrade, SEP Existing Digester Roof Repairs, SEP Northside Reliability Project) have already been constructed, while 20 projects could be under construction during some portion of the five-year construction period of the BDFP. Like the project, construction of all cumulative projects would require the use of fuel and energy, and could also require the use of water. The amount of fuel, energy and water consumed during construction would vary by project. The projects identified in Table 4.1-1 are within San Francisco and would be subject to the same regulatory framework as the project for the use of fuel, water, and energy during construction.[36] These requirements include the California Green Building Standards Code, Clean Construction Ordinance (applicable to most public projects), Environment Code Chapter 14 and Section 708, and Public Works Code Article 21. Compliance with these existing regulations by the identified cumulative projects would ensure that fuel, water, or energy resources are not used wastefully during construction, and that construction of these projects would not result in a significant adverse, cumulative impact to which the BDFP project could contribute.

[36] One project, the Peninsula Corridor Electrification Project (Caltrain Peninsula Corridor Joint Powers Board), would not be subject to City policies and ordinances, but would be subject to the state regulations pertaining to energy and water conservation discussed in Section 4.18.2.2.

Regarding operations-phase impacts related to energy and water use, many of the projects listed in Table 4.1-1 involve repair and replacement of existing systems and equipment at the SEP and elsewhere (e.g., SEP Chemical System Relocation and Facilities Upgrade, SEP Existing Digesters Roof Repair, Existing Digester Gas Handling Improvements); these projects generally would not increase consumption of energy and water above existing levels. Operation of the other projects listed in Table 4.1-1 would require the use of fuel, energy or water in varying quantities. For example, similar to the BDFP, generators and other diesel-fueled equipment that could be installed as part of the cumulative projects would use fuel, but these uses are generally required by safety regulations. As indicated above, the projects identified in Table 4.1-1 are within San Francisco and would be subject to the same regulatory framework as the BDFP for the use of fuel, water, and energy during operations. At a minimum, applicable regulations would include current State standards regarding energy consumption and conservation (e.g., energy efficiency standards and green building standards in Title 24 of the California Code of Regulations). The application of local energy and water efficiency requirements would vary by project type, size, and sponsor but could include Chapter 7 of the San Francisco Environment Code or the 2013 San Francisco Green Building Code, San Francisco Better Roofs Requirements for Renewable Energy Facilities Ordinance, the San Francisco Water Efficient Irrigation Ordinance, and (if within a recycled water use area) the Reclaimed Water Use and Non-Potable Water ordinances. Compliance with applicable energy and water use regulations would ensure that the identified cumulative projects in the region would not result in wasteful use of these resources. As a result, there would not be a significant cumulative impact from the wasteful use of fuel, energy, or water to which the BDFP project could contribute. Accordingly, the cumulative effect would be ***less than significant***.

Mitigation: None required.

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4.19 Agriculture and Forest Resources

This section describes existing agricultural and forest resources in the project area and the potential for implementation of the Biosolids Digester Facilities Project (BDFP or project) to adversely affect those resources. This impact analysis evaluates the potential agriculture and forest resources impacts of the project construction and operation, and identifies mitigation measures to avoid or reduce significant adverse impacts, as appropriate. Please see Section 4.14, Biological Resources, for discussion of the San Francisco Urban Forestry Ordinance as it relates to protected trees.

4.19.1 Setting

The project site and off-site staging areas are located on the eastern side of San Francisco, in the Bayview-Hunters Point neighborhood (refer to Figures 2-1 and 2-2 in Chapter 2, *Project Description*). As described in Section 4.2, Land Use, the project site and off-site staging areas are designated for public and heavy industrial uses under the City's zoning.

The California Department of Conservation, Division of Land Resource Protection, maps important farmlands throughout California. Important farmlands include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. There are no important farmlands mapped on the project site or off-site staging areas.[1]

Section 12220(g) of the California Public Resources Code defines forest land as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Timberland is land (other than land owned by the federal government and land designated by the California Department of Forestry and Fire Protection [CAL FIRE] as experimental forest land) that is available for and capable of growing a crop of trees of any commercial species used to produce lumber and other forest products. Statewide land cover mapping prepared by CAL FIRE as part of ongoing land cover monitoring classifies land cover into 13 land cover classes. The land cover maps characterize land cover at the project site and off-site staging areas as urban; therefore, there are no timber harvesting activities at the project site or off-site staging areas.[2]

[1] California Department of Conservation, California Farmland Conversion Report 2008-2010, April 2014. Available online at http://www.conservation.ca.gov/dlrp/fmmp/Pages/FMMP_2008-2010_FCR.aspx.

[2] California Department of Forestry and Fire Protection (CAL FIRE), [Map] State of California Land Cover, Multi-Source Data Compiled in 2006, February 2011. Available online at http://frap.fire.ca.gov/data/frapgismaps/landcover2006_download. Accessed on September 8, 2015.

4.19.2 Regulatory Framework

4.19.2.1 Federal Regulations

The Farmland Protection and Policy Act requires an evaluation of the relative value of farmland including Prime Farmland, Unique Farmland, and Farmlands of Statewide or Local Importance, as follows, that could be affected by decisions sponsored in whole or part by the federal government:[3]

- ***Prime Farmland*** is land that has the best combination of physical and chemical characteristics for long-term crop production. It has the soil quality, growing season, and moisture supply needed to sustain high crop yields when appropriately treated and managed. In addition, the land must have been used for irrigated agricultural production in the last four years to qualify under this category.

- ***Unique Farmland*** is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include the types of non-irrigated orchards or vineyards that are found in some climatic zones of California. Unique Farmland must have been in agricultural production at some time during the four years prior to the mapping date.

- ***Farmland of Statewide Importance*** is similar to Prime Farmland, but with minor shortcomings such as greater slopes and less ability to store moisture.

- ***Farmland of Local Importance*** applies to land of importance to the local agricultural economy as determined by the county. This land is either currently producing crops or has the capability of production, but does not meet the criteria of the preceding categories.

The Farmland Protection and Policy Act would not apply to the project, since the project is not a federal government action or program.

4.19.2.2 State Regulations

The California Land Conservation Act of 1965 (commonly referred to as the Williamson Act) is the state's primary program for the conservation of private land for agricultural and open space uses. The Williamson Act provides a mechanism through which private landowners can contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. In return, Williamson Act contracts offer tax incentives by ensuring that land is assessed for its agricultural productivity rather than its highest and best use. Contracts typically restrict land use for a period of 10 years; however, some jurisdictions exercise the option to extend the term for up to 20 years. Contracts are automatically renewed unless the landowner files for non-renewal or petitions for cancellation.

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[3] United States Department of Agriculture Natural Resources Conservation Service, Farmland Protection Policy Act. Available online at http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/. Accessed on June 27, 2016.

The California Department of Conservation prepares countywide maps of lands enrolled in Williamson Act contracts and classifies them into the following categories[4]:

- ***Prime Agricultural Land.*** This category represents the state's highest quality agricultural land. Land in this category is typically used for the production of irrigated crops or to support livestock.
- ***Non-Prime Agricultural Land.*** This category represents Open Space Land of Statewide Significance as defined under the California Open Space Subvention Act. Most land in this category is being used for agricultural purposes, such as livestock grazing or non-irrigated crops, but may also include other open space uses that are compatible with agriculture and consistent with local general plans.
- ***Land in Non-Renewal.*** This category represents land under a Williamson Act contract that is being terminated at the option of the landowner or local government.

There are no agricultural lands, including Williamson Act lands, within the project site or off-site staging areas. No state regulations pertaining to forest resources apply to the project.

4.19.2.3 Local Regulations

The San Francisco Board of Supervisors established an Urban Agriculture Program in 2012 to provide institutional support for urban agriculture, including the growing of plants and raising of animals.[5] The project site and off-site staging areas are not currently used for urban agriculture (except for the Southeast Greenhouses) or planned for such use. The Southeast Greenhouses were used for urban agriculture at the time of the Notice of Publication but will be demolished in 2017 as part of a separate project; potential future uses of the site are being evaluated by the SFPUC. There are no local regulations governing agriculture or forest resources that apply to the project.

4.19.3 Impacts and Mitigation Measures

4.19.3.1 Significance Criteria

The project would have a significant impact on agriculture and forest resources if the project were to:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;

[4] Department of Conservation, Division of Land Resource Protection, *State of California Williamson Act Contract Land*, 2013.

[5] San Francisco Board of Supervisors, Agenda Packet 7/17/12 San Francisco Administrative Code. Available online at http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/bosagendas/materials/bag071712_120404.pdf. Accessed on June 27, 2016.

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526);
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- 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 forest land to non-forest use.

Due to the nature of the project, there would be no impact related to the following topics for the reasons described below:

- ***Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-Agricultural Use.*** The project would not be on land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, this criterion is not applicable to the project.
- ***Conflict with Zoning for Agricultural Use or with a Williamson Act Contract.*** The project would not be on land used or zoned for agricultural activities. The project site and off-site staging areas are not subject to a Williamson Act contract. Therefore, this criterion is not applicable to the project.
- ***Conflict with Existing Zoning for Forest Land, Loss of Forest Land, or Conversion of Forest Land to Non-Forest Use.*** There is no forest land on the project site or off-site staging areas; thus, implementation and operation of the project would not conflict with zoning regulations for forest land, result in the loss of forest land, or result in the conversion of forest land to non-forest use. Therefore, the third and fourth criteria listed above are not applicable to the project.

4.19.3.2 Approach to Analysis

For this analysis, state and local planning documents and maps were reviewed to identify agricultural or forest resources present at the project site or construction staging areas that, because of their proximity, could be directly or indirectly affected by the project.

4.19.3.3 Impact Evaluation

Construction and Operational Impacts

Impact AG-1: The project would not involve changes in the existing environment which could result in the conversion of farmland to non-agricultural use or forest land to non-forest use. (No Impact)

As indicated in the preceding text, none of the areas affected by the project are designated as Farmland or forest land. Therefore, the project would have ***no impact*** on farmland or forest land.

Mitigation: None required.

Cumulative Impacts

Impact C-AG-1: The project, in combination with past, present, and probable future projects, would not substantially contribute to cumulative impacts on farmland or forest land. (No Impact)

Pursuant to CEQA Guidelines Section 15130(a)(1), an EIR should not discuss impacts that do not result in part from the project evaluated in the EIR. As described under Impact AG-1, the project would have no impact related to the conversion of farmland to non-agricultural use or forest land to non-forest use. Therefore, there would be ***no significant cumulative impact*** on these resources to which the project would contribute.

Mitigation: None required.

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CHAPTER 5
Other CEQA Issues

5.1 Growth Inducing Impacts

Section 15126.2(d) of the California Environmental Quality Act (CEQA) Guidelines requires that an environmental impact report (EIR) discuss "the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

As discussed in Chapter 4, Section 4.4, Population and Housing, the Biosolids Digester Facilities Project (BDFP or project) does not involve any housing construction and therefore would not induce growth directly by constructing housing that would attract people to the area. Project construction would not extend roads or other infrastructure that could indirectly induce growth. Given the size and availability of the regional workforce, project construction would not be expected to induce demand for housing by attracting a substantial number of workers from outside the region. Nor would the project provide new permanent employment opportunities that could attract workers to the area; long-term operation of the BDFP would not increase the number of workers employed at the Southeast Water Pollution Control Plant (Southeast Plant or SEP).

The existing sewer system is already sized to serve the projected population of over 1 million residents by 2045. Both the Southeast Plant and Oceanside Plant have capacity for the projected flows expected in 2045 and the biosolids digester facilities at the SEP would be designed to treat the solids from these projected flows up to the existing capacity. Project implementation would thus maintain the existing overall capacity of the SEP. As described in Section 4.4, Population and Housing, the proposed solids treatment facilities capacity provided by the BDFP is based on projections presented in the San Francisco Public Utilities Commission (SFPUC) *Wastewater Flow and Load Projections Technical Memorandum*.[1] The flow and load projections were developed using the most recent data available from SEP and Oceanside Water Pollution Control Plant operations and the (then) most recent population and employment projections developed by the Association of Bay Area Governments (ABAG), the Bay Area's regional planning agency. ABAG projections are relied on for planning by transportation and air quality agencies, water agencies, local governments, and others,

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1 SFPUC, *Wastewater Flow and Load Projections Technical Memorandum*, Prepared for San Francisco Public Utilities Commission Sewer System Improvement Program, Updated February 2014.

and are routinely used by the San Francisco Planning Department in its land use allocations to project growth throughout the City and County of San Francisco. Use of ABAG's *Projections 2013* to project wastewater flows and loads ensures that treatment capacity provided by the SEP and the associated solids treatment improvements provided by the BDFP would be consistent with planned growth and would not provide excess capacity that could potentially accommodate unplanned growth.

Based on this analysis, the project would not have a substantial growth-inducing impact, and no mitigation is required.

5.2 Significant Unavoidable Impacts

In accordance with Section 21100(b)(2)(A) of CEQA and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, the purpose of this section is to identify project-related environmental impacts that could not be eliminated or reduced to a less-than-significant level with implementation of all feasible mitigation measures, as identified in Chapter 4, *Environmental Setting and Impacts*. The findings in this chapter are subject to final determination by the San Francisco Planning Commission as part of its certification of the Final EIR.

5.2.1 Cultural Resources

The project would result in the demolition of Buildings A and B at the Central Shops site, which are eligible for listing in the California Register of Historical Resources and National Register of Historic Places. Demolition of Buildings A and B would destroy the physical characteristics that convey historical significance of these buildings, as detailed in Section 4.5, Cultural Resources, causing a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. This impact would be significant and unavoidable, even with implementation of Mitigation Measure M-CR-1 (Documentation of Historic Resources and Interpretive Display), which would require written and photographic documentation of Buildings A and B consistent with National Park Service Historic American Building Survey/ Historic American Engineering Record Historical Report Guidelines prior to their demolition, as well as installation of a permanent display of interpretive materials in a prominent, public setting. Implementation of this measure would reduce the severity of the impact, but not to a less-than-significant level. The project would cause a substantial adverse change in the significance of a historical resource, and the impact would be *significant and unavoidable, with mitigation.*

Furthermore, the project would result in a substantial contribution to cumulative impacts on historic architectural resources when considered in combination with past, present, and probable future projects (specifically the Demolition of the Existing SEP Digesters and Southside Renovation Project). This would be *significant and unavoidable*, even with implementation of Mitigation Measure M-CR-1 (Documentation of Historic Resources and Interpretive Display). The impact associated with the demolition of Building 870, a contributor located within the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*, from implementation of the BDFP in combination with the impact associated with the proposed future demolition of all existing digesters (Buildings 630-730) and their control buildings (Buildings 620 and 680), as part of the Southside Renovation Project, would result in a significant, adverse cumulative impact on historic architectural resources. In addition to the loss of one of the *Southeast Treatment Plant Streamline Moderne Industrial Historic District's* 22 contributory buildings, the overall implementation of the BDFP would replace the function of the existing digesters and associated control buildings, thereby allowing for demolition of the existing digesters and control buildings. Therefore, the proposed project's contribution to this cumulative impact is considered cumulatively considerable, and cumulative impacts would remain *significant and unavoidable, with mitigation*.

5.2.2 Air Quality

The project includes construction activities and equipment that would generate NOx, an ozone precursor and criteria air pollutant, above the City's significance threshold for NOx during all five construction years. For this reason, the project would violate an air quality standard, a significant impact. Implementation of Mitigation Measure M-AQ-1a (Construction Emissions Minimization) would help to reduce NOx emissions, but not to below the applicable significance threshold during the first and third construction years. Implementation of Mitigation Measure M-AQ-1b (Emission Offsets) could offset the residual NOx emissions to below significance thresholds; however, whether implementation of Mitigation Measure M-AQ-1b would fully offset excess NOx emissions cannot be confirmed for two reasons. First, the SFPUC is in the process of determining whether there are enough opportunities available for upgrading existing SFPUC facilities sufficient to achieve the needed offset to reduce this impact to below the significance threshold. Second, although implementation of emissions offsets via the mitigation offset fee would result in an agreement with a third party, the BAAQMD, that agreement depends in part on the actions of that third party, and thus is not fully within the City's control. Given these uncertainties, the residual impact of construction emissions is conservatively considered significant, and the project's impact would remain *significant and unavoidable, with mitigation*.

5.3 Areas of Known Controversy and Issues to Be Resolved

On June 24, 2015, the San Francisco Planning Department issued a Notice of Preparation (NOP) of an EIR. In accordance with Section 15082 of the CEQA Guidelines, on June 24, 2015, the Planning Department sent over 2,340 copies of the NOP to public agencies and interested parties to begin the formal CEQA scoping process for the project. Notices were sent to potentially interested parties, including various state, regional, and local agencies, as well as to owners of properties within at least 300 feet of the north and west boundaries of the SEP and to owners of properties south of the SEP to Palou Avenue and east to Third Street. The Planning Department held a scoping meeting on July 16, 2015 to solicit comments on the scope of the EIR. The NOP is included in Appendix NOP of this document.

No areas of scientific or technical controversy have been identified for this project. Public comments received on the NOP for the proposed project included the following:

- Pedestrian, bicyclist and motorist safety during construction
- Transit impacts related to construction

- Overall health impacts related to truck traffic, exposure to diesel particulates and dust, and respective mitigation measures
- Construction and operations job opportunities for the community; benefits of project to the community
- Community involvement and outreach
- Use of the facility for educational and training purposes
- Conflicts with other concurrent construction projects in vicinity; potential for cumulative impacts with other projects
- Odors
- Environmental justice[2]
- Issues related to aesthetics
- Cumulative impacts of concurrent projects
- Loss of Southeast Greenhouses
- Alternative location for project
- Use of compostable materials

[2] The U.S. Environmental Protection Agency's (USEPA) Office of Environmental Justice defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Consistent with CEQA, economic or social effects of a project are not to be treated as significant effects on the environment (CEQA Guidelines Section 15131). The EIR focuses on physical environmental effects rather than socioeconomic effects. The SFPUC is conducting a separate environmental justice analysis concurrent with the project, which can be found at the following website: http://sfwater.org/index.aspx?page=654.

CHAPTER 6

Alternatives

Sections	Tables	Figures
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6.1 Overview

6.1.1 Purpose of this Chapter

As required by the California Environmental Quality Act (CEQA), this chapter presents the alternatives analysis for the Biosolids Digester Facilities Project (BDFP or project) proposed by the San Francisco Public Utilities Commission (SFPUC) to replace the solids treatment and related facilities at the existing Southeast Water Pollution Control Plant (SEP) in San Francisco. The purpose of the CEQA alternatives analysis is to identify potentially feasible alternatives that could avoid or substantially lessen the significant impacts identified for the project while still meeting most of the project objectives. This chapter describes both the methodology used to screen and select alternatives to the project for detailed CEQA analysis as well as the results of the detailed alternatives analysis. For the alternatives selected for detailed analysis, the chapter evaluates the alternatives' impacts relative to existing environmental conditions and compares the potential impacts of the alternatives with those of the project. Based on this analysis, this chapter then identifies the environmentally superior alternative. Finally, other alternatives that were considered but eliminated from detailed consideration are presented together with the reasons for their elimination.

6.1.2 CEQA Requirements for Alternatives Analysis

CEQA Guidelines Section 15126.6(a) states that an environmental impact report (EIR) must describe and evaluate a reasonable range of alternatives to the project that would feasibly attain most of the project's basic objectives but would also avoid or substantially lessen any identified significant adverse environmental effects of the project. CEQA Guidelines Section 15364 defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." CEQA Guidelines Section 15126.6(f)(1) states that "the factors that may be taken into account when addressing the potential feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent)."

The EIR must evaluate the comparative merits of the alternatives and include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. Specifically, the CEQA Guidelines set forth the following criteria for selecting and evaluating alternatives:

- ***Range of reasonable alternatives.*** An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (Section 15126.6[f]). An EIR is not required to consider alternatives that are infeasible. (Section 15126.6[a]) The specific alternative of "no project" shall also be evaluated along with its impact (Section 15126.6[e][1]).

- ***Ability to avoid or substantially reduce significant effects.*** The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (Section 15126.6[b]).

- ***Ability to meet project objectives.*** The range of potential alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (Section 15126.6[c]).

6.2 Alternatives Screening and Selection

Consistent with CEQA, the approach to alternatives selection focused on the following criteria for identifying the range of alternatives:

- Does the alternative reduce the severity of one or more of the project's significant adverse impacts?

- Is the alternative potentially feasible?
- Does the alternative meet most of the basic objectives of the project?
- Does the alternative foster informed decision-making and public participation?

The screening process involved three main steps: (1) review of potentially impact-reducing or impact-avoidance concepts and strategies that were previously identified either by members of the community or by the SFPUC, (2) review of significant impacts identified in the EIR, and (3) formulation of alternatives that would meet CEQA requirements. Most of the concepts and strategies previously identified by the public or the SFPUC were eliminated from consideration for CEQA purposes based on one or more of the following reasons: (1) their inability to reduce the project's significant impacts that were identified in Chapter 4 of this EIR, (2) their infeasibility, (3) their inability to meet most of the project's basic objectives, and/or (4) their potential to result in greater environmental impacts than the project. Section 6.5 describes potential alternatives and other strategies that were considered but eliminated and the reasons for their elimination.

6.2.1 Alternatives Previously Identified for the BDFP

6.2.1.1 Alternatives Identified by the Public

Residents of the Bayview-Hunters Point community and other members of the public suggested numerous alternative concepts to the project, all of which were considered as part of the alternatives screening process for this EIR.

The nine-member Southeast Digester Task Force was an advisory group representing the local Bayview-Hunters Point community and convened by the SFPUC for the purpose of reviewing and evaluating alternative concepts for replacing the SEP digesters. The Digester Task Force met regularly during 2009 and 2010 before delivering a final report, the Southeast Digester Task Force Final Report,[1] to the City and County of San Francisco (City or CCSF) that included recommendations for site options and facility layouts, among other things. The Digester Task Force evaluated 16 site options, screened out most of the sites due to their infeasibility (e.g., inadequate size, distance from the SEP, site contamination, and/or site unavailability), reconfigured the remaining sites, and ultimately recommended the following two sites:

- The proposed BDFP site, which is described in Chapter 2, *Project Description*, and evaluated in Chapter 4, *Environmental Setting and Impacts*, as the proposed project in this EIR.
- The Pier 94 Backlands site, which is described and evaluated in this EIR as a CEQA alternative in Section 6.3, below.

A variation of an alternative considered by the Task Force (the SEP South/Quint Street Alternative), the project site plus SEP South, is also described and evaluated in this EIR as a CEQA alternative in Section 6.3 below. Section 6.5, below, identifies the other options identified by the task force and describes the reasons they were eliminated from detailed analysis in the EIR.

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1 Southeast Digester Task Force for the San Francisco Public Utilities Commission, *Review of the Biosolids Digester Facility Project*, June 2, 2010.

During the scoping period for this EIR (see Chapter 1, Section 1.2, Environmental Review Process), one community member suggested the following three alternatives to the project:

- The first alternative would divert some wastewater flows from the SEP to the SFPUC Oceanside Water Pollution Control Plant but otherwise would not alter existing SEP solids processing facilities. This alternative was considered for evaluation in the EIR but ultimately rejected for reasons stated in Section 6.5, below.
- The second alternative would locate the BDFP facilities at 1550 Evans Avenue or the Pier 94 site. The 1550 Evans alternative was considered for evaluation in the EIR but ultimately rejected for reasons stated in Section 6.5, below. The Pier 94 site is described and analyzed as a CEQA alternative in Section 6.3.2, below.
- The third alternative component proposed hauling biosolids by rail instead of by truck. This alternative was considered for evaluation in the EIR but ultimately rejected for reasons stated in Section 6.5, below.

6.2.1.2 Other Alternatives Identified During Project Planning

The SFPUC has identified and examined numerous alternative concepts to address the need for and objectives of the BDFP over many years. As part of the alternatives screening process for the BDFP EIR, the SFPUC's Needs Assessment Report[2] and the Alternatives Analysis Report[3] were reviewed for possible alternatives that could meet CEQA criteria for EIR alternatives. The Needs Assessment Report identified requirements and modifications needed for the SEP biosolids facilities to meet the Sewer System Improvement Program (SSIP) levels of service goals (refer to Table 2-3 in Chapter 2, *Project Description*). The report evaluated four alternatives that could meet future needs and could achieve level of service goals, two of which advanced the recommendations of the Digester Task Force (construction of new biosolids digester facilities at either the proposed BDFP site or at the Pier 94 Backlands, described in Section 6.2.1.1, above). The remaining two alternatives were the following:

- *Maintain Existing Facilities.* This alternative, involving long-term maintenance of existing facilities, essentially represents what would reasonably be expected to occur if the BDFP is not approved, and is described and analyzed under the No Project Alternative (refer to Section 6.3.1, below).
- *Rebuild Existing Facilities in Place.* This alternative concept involves reconstruction of existing solids handling facilities in place. Section 6.5, below, describes this potential alternative and the reasons it was eliminated from detailed analysis in this EIR.

During development of the BDFP, the SFPUC evaluated processing technology, treatment train, and site layout options for the BDFP as part of the Alternatives Analysis Report. The results yielded the proposed technology (thermal hydrolysis process with mesophilic anaerobic digestion), unit processes, and site layout described in Chapter 2, *Project Description*. Section 6.5, below, describes

2 SFPUC, *Needs Assessment Report: Southeast Water Pollution Control Plant Biosolids Digester Facilities, Draft Final*, January 2016.
3 SFPUC, *Biosolids Digester Facilities Project Alternatives Analysis Report*, December 2014.

three of the site layout options considered for potential evaluation in the EIR and the reasons they were eliminated.

6.2.2 Strategies to Avoid Significant Impacts

The primary goal of the alternatives selection process is to identify alternatives that could substantially reduce or avoid one or more of the significant impacts attributable to the project, in accordance with CEQA Guidelines Section 15126.6(b). The following sections summarize the conclusions for significant and potentially significant impacts of the BDFP that were identified in Chapter 4, *Environmental Setting and Impacts*, of this EIR and describe strategies that were considered for inclusion in the alternatives analysis based on their ability to avoid or lessen significant or potentially significant impacts. See Chapter 4 for details regarding the impacts of the project.

6.2.2.1 Significant and Unavoidable Impacts

The project was determined to have the following significant and unavoidable impacts.

Cultural Resources

- Project implementation would cause a substantial adverse change in the significance of a historic architectural resource through the demolition of Central Shops Buildings A and B. Even with implementation of Mitigation Measure M-CR-1 (Documentation of Historical Resources and Interpretive Display), the impact would be *significant and unavoidable.* (Impact CR-1)
- The project would result in a substantial contribution to cumulative impacts on historic architectural resources because the project would demolish Building 870, a contributor to a *Southeast Treatment Plant Streamline Moderne Industrial Historic District* (historic district), and implementation of the BDFP would replace the function of the existing digesters and associated control buildings, which are contributors to the historic district, thereby allowing for a potential future project involving demolition of the existing digesters and control buildings. (Demolition of the existing digesters and control buildings is not part of the BDFP.) Loss of Building 870 (contributor within the historic district) under the project, in combination with the proposed future demolition of all existing digesters and their control buildings, would result in a significant, adverse cumulative impact on the district and therefore an adverse impact on historic architectural resources. Even with implementation of Mitigation Measure M-CR-1 (Documentation of Historical Resources and Interpretive Display), the impact would be *significant and unavoidable.* (Impact C-CR-1)

Air Quality

- Of the criteria air pollutants that would be generated during project construction, nitrogen oxide (NOx) emissions would violate an existing air quality standard, both at the project level and cumulatively. Even with implementation of Mitigation Measures M-AQ-1a (Construction Emissions Minimization) and M-AQ-1b (Emission Offsets), these impacts would be *significant and unavoidable* during two of the five years of construction. (Impacts AQ-1, C-AQ-1a)

6.2.2.2 Strategies to Avoid or Lessen Significant Unavoidable Impacts

Significant and Unavoidable Impact on Historic Architectural Resources

Strategies to avoid the project's impact on historic architectural resources (i.e., demolition of Central Shops Buildings A and B) were examined in detail in a memorandum from ESA+Orion to the San Francisco Planning Department.[4] In 2015, the San Francisco Historic Preservation Commission approved Resolution No. 0746 recommending that EIRs that identify demolition of a historic architectural resource in San Francisco include a robust alternatives evaluation. The resolution states that EIR alternatives evaluation should include, in addition to the required No Project Alternative, at least one full preservation alternative (i.e., an alternative that would fully preserve the resource) and one partial preservation alternative (i.e., an alternative that would partially preserve the resource), while taking into account the potential feasibility of the proposed alternatives and their ability to achieve the project objectives. The resolution also requests that EIRs describe these alternatives. As part of the alternatives development process for this EIR, full and partial preservation strategies were identified to meet the Historic Preservation Commission recommendations[5] as well as the CEQA requirements. In total, ten strategies to reduce or avoid impacts on historic architectural resources were considered: six "full preservation" alternatives that would avoid the impact entirely and four "partial preservation" alternatives that would lessen the severity of the impact by retaining a portion of the resource. Three full preservation alternatives identified in this process (the No Project, Pier 94 Backlands, and Historical Resources Relocation Alternatives) were selected as alternatives for detailed analysis in this EIR in Section 6.3, below. In addition, the SEP South/Quint Street Alternative (one of the site options considered by the Digester Task Force) was selected for detailed analysis in Section 6.3, below and is also considered a full preservation alternative. All of the partial preservation strategies were deemed either to be infeasible or ineffective in substantially reducing the significant and unavoidable impact on historic architectural resources. The strategies to avoid or reduce impacts on historic architectural resources that were considered but eliminated from further analysis are described in Section 6.5, below.

Cumulative Significant and Unavoidable Impact on Historic District

The project would result in a substantial contribution to cumulative impacts on historic architectural resources because the overall implementation of the BDFP would replace the function of the existing digesters and associated control buildings, which are contributors to the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*, thereby allowing for future potential demolition of the existing digesters and control buildings. Phase II of the SFPUC's SSIP includes demolition of the existing SEP digesters and associated control buildings, and improvements within the south side of the SEP,[6] once the BDFP is constructed and fully operational. With the BDFP and the proposed future demolition of the existing digesters,

[4] Brewster, Brad, Jill Hamilton, and Joyce Hsiao, Memorandum to Steve Smith and Tina Tam, San Francisco Planning Department, regarding SFPUC Biosolids Digester Facilities Project EIR Preservation Alternatives, May 25, 2016.

[5] Ibid.

[6] More information on this project, Demolition of the Existing SEP Digesters and Southside Renovation Project, can be viewed in Table 4.1-1 in Section 4.1 of this EIR.

approximately 13 of the 22 contributing structures to the historic district would be demolished, a significant, unavoidable cumulative impact.

The fundamental project objective is to "replace the existing solids treatment facilities at the SEP with new infrastructure with modern and more efficient treatment technologies to protect public health and safety and provide continued regulatory compliance." Thus, *any* alternative that would achieve this single objective would also result in a substantial contribution to cumulative impacts on historic architectural resources by replacing the function of the existing digesters and allowing for potential future demolition of the existing digesters. There is no alternative that could avoid or substantially reduce the severity of this significant and unavoidable cumulative impact on the historic district *and* meet this fundamental project objective. Therefore, with the exception of the No Project Alternative, none of the alternatives described and analyzed in Section 6.3, below, addresses this significant and unavoidable cumulative impact on the historic district.

Significant and Unavoidable Construction Air Quality Impacts

The project would result in significant and unavoidable impacts associated with criteria air pollutant emissions (specifically ozone precursors, NOx) during the first and third years of construction, both on a project and cumulative impact basis, even with implementation of maximum feasible mitigation measures for construction emissions minimization. Implementation of Mitigation Measure M-AQ-1b (Emission Offsets) could reduce these impacts to less than significant, by reducing NOx emissions to below the threshold level within the same air basin. However, these impacts are still considered significant and unavoidable because of uncertainties related to the availability of sufficient offset opportunities and reliance on an agreement with a third party (the BAAQMD).

No feasible strategy or alternative has been identified to avoid or substantially reduce the severity of these impacts beyond the mitigation measures presented in Chapter 4, Section 4.8. Consequently, only the No Project Alternative would avoid these significant and unavoidable, air quality impacts.

6.2.2.3 Significant Impacts that Can be Mitigated to Less than Significant

Project implementation would result in the following significant impacts, all of which could be mitigated to less-than-significant levels with the implementation of mitigation measures identified in Chapter 4, *Environmental Setting and Impacts*, under the respective impact evaluations.

Cultural Resources

- Ground-disturbing activities during project construction would affect known prehistoric archeological resources or could affect unidentified deeply submerged prehistoric deposits, resulting in a substantial adverse change in the significance of an archeological resource, as both a project-level impact and a cumulative impact. With implementation of Mitigation Measures M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery) and M-CR-2b (Accidental Discovery of Archeological Resources), both impacts would be *less than significant*. (Impacts CR-2 and C-CR-2)

- Project construction could disturb human remains, including those interred outside of formal cemeteries, as both a project-level impact and a cumulative impact. With implementation of Mitigation Measure M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery), both impacts would be *less than significant*. (Impacts CR-3 and C-CR-2)

Noise

- Use of concrete saws during project construction could cause a substantial temporary or periodic increase in ambient noise levels and could expose people to or generate noise levels in excess of noise level standards established in the local noise ordinance. In addition, use of the Southeast Greenhouses as a staging area could substantially exceed the ambient noise levels at nearby sensitive receptors. With implementation of Mitigation Measure M-NO-1a (Shielding of Concrete Saw Operations) and Mitigation Measure M-NO-1b (Construction Noise Control Measures at Southeast Greenhouses Staging Area), this impact would be *less than significant*. (Impact NO-1)
- Noise from project construction, combined with construction noise from cumulative projects nearby, could cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity. With implementation of Mitigation Measures M-NO-1b (Construction Noise Control Measures at Southeast Greenhouses Staging Area), the project's contribution to this impact would be *less than cumulatively considerable*. (Impact C-NO-1)

Air Quality

- The NOx emissions during project construction could conflict with or obstruct implementation of the 2010 Clean Air Plan, but with implementation of Mitigation Measures M-AQ-1a (Construction Emissions Minimization) and M-AQ-1b (Emission Offsets), the project would be consistent with the 2010 Clean Air Plan, and this impact would be *less than significant with mitigation*. (Impact AQ-4)

Biological Resources

- Project construction could have a substantial adverse effect on roosting bats, as both a project-level and cumulative impact. However, with implementation of Mitigation Measure M-BI-1 (Protective Measures for Special Status Bats and Maternity Roosts), these impacts would be *less than significant*. (Impacts BI-1 and C-BI-1)

Geology, Soils and Paleontological Resources

- Project construction could destroy a unique paleontological resource, as both a project-level impact and a cumulative impact. However, with implementation of Mitigation Measure M-GE-4 (Paleontological Resources Monitoring and Mitigation Program), these impacts would be *less than significant*. (Impacts GE-4 and C-GE-2)

6.2.2.4 Strategies to Avoid or Lessen Significant Impacts that can be Mitigated to Less than Significant

Several strategies were identified to avoid or more effectively mitigate noise and air quality impacts determined to be less than significant after mitigation. These impacts are generally all associated with project construction, and strategies to avoid or more effectively mitigate such impacts include extending the construction schedule and revising the construction methods.

Extending the construction schedule could reduce the severity of air quality impacts (by reducing concurrent use of air pollutant-emitting construction equipment such that NOx emissions would be consistent with the 2010 Clean Air Plan); however, this strategy would prolong numerous other construction activity impacts (e.g., noise, traffic, air pollutant emissions) and would not reduce the total criteria air pollutant emissions; on balance, this strategy would not effectively reduce or avoid these construction-related impacts over the duration of the construction period. The severity of Impacts NO-1, C-NO-1, and AQ-4 could potentially be reduced by avoiding or reducing the use of concrete saw operations; however, this strategy could be overly cumbersome, if even feasible, and would likely extend the construction schedule, such that this strategy would not effectively reduce or avoid these construction-related noise and air quality impacts. Therefore, neither extending the construction schedule nor revising the construction methods were determined to more effectively mitigate noise and air quality impacts than the identified mitigation measures, and these strategies were eliminated from further consideration.

To avoid construction impacts related to cultural and paleontological resources, the SFPUC would need to revise the construction methods to avoid subsurface excavation, assuming the project would remain at the proposed location. This strategy is not feasible. As shown on Figure 2-8 in Chapter 2, *Project Description*, subsurface facilities are integral components of the project. Because feasible mitigation measures are available that would effectively reduce these impacts to less than significant, alternative construction methods that would avoid subsurface excavation were eliminated from further consideration and are not addressed under any of the alternatives. Another strategy that would avoid construction impacts related to cultural and paleontological resources would be to locate the new facilities at a site that does not have known or suspected buried resources. This strategy is addressed and analyzed in Section 6.3, below, under Alternative B, the Pier 94 Backlands Alternative.

Similarly, to avoid construction impacts related to effects on roosting bats, the SFPUC would need to revise the construction methods to avoid building demolition and tree removal as well as reduce construction-associated noise and vibration. This strategy is not feasible at the proposed project location because building demolition and removal of trees are necessary prerequisites for the project. Although these impacts could potentially be avoided or reduced if the project is constructed at a different location (addressed under the Pier 94 Backlands Alternative in Section 6.3, below), there is the potential that the same or other impacts on biological resources could occur at the alternative location. Section 6.3.2, below, evaluates the relative merits of the Pier 94 Backlands Alternative for its effectiveness in reducing construction effects on biological resources (including roosting bats) compared to the project. Nevertheless, because feasible mitigation measures are available that would effectively reduce these impacts to less than significant, alternative construction methods that would avoid building demolition and tree removal at the project site were eliminated from further consideration.

6.2.3 Alternatives Selected for Detailed Analysis

The screening process described above identified four alternatives to the BDFP that represent a reasonable range of alternatives and warrant further analysis as CEQA alternatives. These include the No Project Alternative plus three feasible alternatives that could avoid or substantially reduce one or more significant impacts of the project and achieve most of the BDFP objectives, thus meeting the CEQA criteria for detailed analysis. The following four alternatives are analyzed in this chapter:

- Alternative A: No Project
- Alternative B: Pier 94 Backlands
- Alternative C: Historical Resources Relocation
- Alternative D: SEP South/Quint Street

With the exception of the No Project Alternative, the identified alternatives would meet most of the project objectives and would lessen, and in some cases avoid, significant adverse impacts that were identified for the proposed project. All four of the above alternatives would be considered full preservation alternatives and would avoid the significant and unavoidable direct impact on historic architectural resources. The No Project Alternative would avoid all significant impacts identified for the proposed project, including the project's significant and unavoidable cumulative impact on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District* and the significant and unavoidable construction-related air quality impact of the proposed project; it would also avoid the significant but mitigable impacts with respect to archeological and paleontological resources, human remains, construction noise, consistency with the 2010 Clean Air Plan, and biological resources (roosting bats). In addition to the significant and unavoidable direct impact on historic architectural resources, the Pier 94 Backlands Alternative would avoid the significant but mitigable impacts related to paleontological resources. Both the Historical Resources Relocation Alternative and the SEP South/Quint Street Alternative would avoid the significant and unavoidable direct impact on historic architectural resources, but for both of these alternatives, all other significant impacts would be the same as those identified for the BDFP.

6.3 Alternatives Analysis

This section presents the detailed analysis of the impacts of the selected alternatives compared to the proposed project. For each of the four alternatives, this section presents a description of the alternative and assumptions used in analyzing that alternative, assesses the ability of the alternative to meet each of the project objectives, and analyzes the impacts of the alternative compared to those of the proposed project. The impact analysis is based on the same environmental setting and significance thresholds as presented for each resource topic in Chapter 4, *Environmental Setting and Impacts*, and uses the same approach to analysis. Except as noted, the impact analysis of the alternatives is qualitative, relative to the identified impacts of the project, and the reader is referred to Chapter 4 for the more detailed analysis. Since the alternatives are conceptual, this evaluation is based on the best available information and reasonable assumptions about how each alternative would be implemented.

Table 6-1 summarizes and compares the characteristics of the project with those of the four alternatives. **Table 6-2** summarizes the ability of the four alternatives to meet the project objectives.

TABLE 6-1
COMPARISON OF PROJECT AND ALTERNATIVES

Characteristic	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Summary					
Facilities Location	Parts of SEP North near Rankin Street and near Jerrold Avenue, Central Shops site, and Asphalt Plant site (no facilities located within Quint Street)	SEP South	Pier 94 Backlands	Same as project	Portions same as project: parts of SEP North near Rankin Street and near Jerrold Avenue and Asphalt Plant site Portions different from project: Part of Central Shops site (excluding the area in and around Central Shops Buildings A and B); parts of SEP South near Quint Street; Quint Street between Jerrold Avenue and the Caltrain right-of-way
New Pipelines between SEP and New Facilities	Within SEP boundaries and project site	n/a	Approximately 4,000 feet of 10 to 12 new pipelines (between 6 and 20 inches in diameter) located within public rights-of way along Cargo Way, Mendell Street, and Evans Avenue	Same as project	Within SEP boundaries and project site, but different locations from the project Relocation of existing utilities under Quint Street may require construction outside the SEP boundaries
Facilities Acreage	Approximately 10 acres	Approximately 9 acres	Approximately 15 acres (excluding off-site pipelines)	Same as project	Approximately 16 acres
Site Acquisition and Availability	SEP available now Asphalt Plant available in 2017 Central Shops available in 2018	SEP available now	May be feasible, but site is part of the public land trust that is under State Lands Commission jurisdiction. Unknown date of availability, but if feasible would require a minimum of several years to acquire. Pipeline alignments within public rights-of-way.	Same as project	Same as project, plus would require vacating Quint Street
Additional Site Needs	n/a	n/a	Would require that land of similar size and value as the area of the Pier 94 Backlands site be identified and be placed into public trust	Pier 90 site (approximately 3 acres), potentially available in the future	Temporary sites for relocation of existing solids treatment facilities (e.g., gravity belt thickeners, centrifuge systems, sludge pipelines, biosolids dewatering, cake storage and loadout, etc.) would be needed for interim use during construction. Locations of these temporary (at least seven years) sites to be determined. Need right-of-way for relocated gas pipeline along Quint Street.
Proximity of Digesters to Residences	1,000 feet	< 100 feet	> 1,800 feet	Same as project	600 feet to Phelps Street 700 feet to Oakdale Avenue
Footprint of Aboveground Structures	Approximately 206,000 square feet	n/a	Building square footage greater than that of project due to height restriction	Same as project	Same as project
Maximum Height	65 feet	65 feet	40 feet	Same as project	Same as project
Sea Level Rise Considerations	Designed to meet 36-inch increase in sea level rise by 2100 as applicable	None	Designed to meet 36-inch increase in sea level rise by 2100 as applicable at this site	Same as project	Same as project
Staging Area Location	Pier 94 Backlands, Pier 94 and/or Pier 96, segments of Quint Street/Jerrold Avenue, Southeast Greenhouses, and/or 1550 Evans Avenue	None	Piers 94 Backlands, Pier 94 and/or Pier 96	Same as project except for possible additional staging area at Pier 90 required for relocation of historic resources	Same as project
Staging Area Acreage	Up to 12 acres	None	Approximately same as project	Same as project, except for possible additional staging area at Pier 90 required for relocation of historic resources	Same as project
Solids Treatment Facilities					
Process	Thermal Hydrolysis Process/Mesophilic Anaerobic Digestion	Mesophilic Anaerobic Digestion	Same as project	Same as project	Same as project

TABLE 6-1 (Continued)
COMPARISON OF PROJECT AND ALTERNATIVES

Characteristic	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Solids Treatment Facilities (cont.)					
Biosolids Type	Class A (fewest restrictions for reuse)	Class B (limited reuse options)	Same as project	Same as project	Same as project
Biosolids Annual Production	24,000 dry tons (year 2045)	27,700 dry tons (Year 2045)	Same as project	Same as project	Same as project
Digesters	Number of digesters: 5 Size of digesters: 1.66 million gallons each Height above grade: 65 feet Diameter: 70 feet	Number of digesters: 10 (9 in active use as digesters and 1 used for biogas storage) Size of digesters: 1.8 million gallons each Height above grade: 22 feet Diameter: 100 feet	Number of digesters: 5 Size of digesters: 1.66 million gallons each Height above grade: 40 feet Diameter: 100 feet	Same as project	Same as project
Digester Gas Production	Approximately 1.6 to 2 million cubic feet per day (2023 to 2045)	Approximately 1.3 to 1.7 million cubic feet per day (2023 to 2045)	Same as project	Same as project	Same as project
Energy Recovery Facilities					
Process	• Gas Turbines • Heat Recovery Steam Generation System • Steam Boilers (backup only) • Waste gas burners	• Internal Combustion Engine • Hot Water Boilers • Waste gas burners	Same as project	Same as project	Same as project
Energy Generation, Annual Average	4.2 to 5.2 megawatts (2023 to 2045)	Up to 2 megawatts	Same as project	Same as project	Same as project
Maximum Height of Structures	55 feet (digester gas storage tank)	26 feet (boilers)	40 feet	Same as project	Same as project
Waste Gas Burners – Operations	2 units, 40 feet tall, infrequent use (only used for testing, planned maintenance, and emergencies)	2 units, 65 feet tall, routine and more frequent flaring over time (due to projected increased loadings)	Same as project	Same as project	Same as project, but closer to residences
Odor Control Facilities					
Design Parameter	Designed to limit odors from biosolids facilities to within SEP site	Odors from biosolids facilities not completely contained within existing SEP site	Designed to limit odors from biosolids facilities to within Pier 94 Backlands site	Same as project	Same as project
Solids Treatment Odor Control Facilities	One new centralized solids odor control system with biofilters, adsorption vessels, ammonia scrubbers, odor control fans, and dispersion cones to treat odors from pre-digestion processes (gravity belt thickeners, screening, pre-THP dewatering, and cake storage) and from post-digestion processes (biosolids dewatering, storage, and loadout)	Adsorption units at gravity belt thickeners, centrifuge building, and cake loadout	Same as project	Same as project	Same as project
Ancillary SEP-Related Facilities					
New Ancillary Facilities	New, redundant plant-wide operations control center for both SEP North and South (i.e., security controls, energy management systems, fire protection and alarm systems, compressed air, and plant communications); new electrical rooms, transformers, chemical storage, and diesel emergency generator	None	Additional redundant facilities would need to be built at this location, including site-specific operations control center at this site, backup power, (diesel generators), chemical storage, and fire protection. Due to the distance from the main SEP, these additional facilities would not support the rest of the SEP in the way the same facilities would with the project.	Same as project	Same as project
New Utility Connections	Not required	None	New connections needed for water supply, high voltage power (substation), sewage, natural gas, communications Increased stormwater drainage improvements needed	Same as project, plus potential utility connections to relocated historic buildings	Relocate 24-inch high pressure PG&E gas line within public right-of-way (to be determined) and other utilities within Quint Street

TABLE 6-1 (Continued)
COMPARISON OF PROJECT AND ALTERNATIVES

Characteristic	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Operations and Maintenance					
Maintenance	• Routine maintenance of new facilities • Routine grit removal during normal operations (due to design, no need to take digesters offline for cleaning)	• High level of maintenance for older equipment • Digester taken out of service for more frequent routine grit removal from digesters • Repair/replacement of facilities as needed (e.g., secondary sludge thickening pumps, gravity belt thickeners, digesters, digester pumps, centrifuges and pumps, bin hoppers, gas booster station equipment, gas handling system components, electrical system)	Similar to project Due to the remote location, additional redundant facilities would need to be maintained and operated	Same as project (does not include maintenance of relocated historic resources)	Similar to project, but layout is not as efficient as proposed project. Maintenance facilities are located far from the processes they would be supporting.
Staffing	No change from existing (280 staff for entire SEP including biosolids)	Slight increase in operations and maintenance staffing compared to existing to ensure reliable operations of aging facilities (up to five additional staff)	Increase of about five staff (to be located at Pier 94 Backlands)	Same as project (does not include staffing for relocated historic resources)	Same as project
Operating Hours	24 hours per day, seven days per week	Same as project	Same as project	Same as project (does not include operations for relocated historic resources)	Same as project
Operational Haul Routes	Grit and screening, biosolids, yellow grease hauling, and chemical delivery via Rankin Street, Evans Avenue, and Cesar Chavez Street to Interstate 280 or U.S. Highway 101	Same as existing condition: grit and screening hauling via Rankin Street, Evans Avenue, and Cesar Chavez Street to Interstate 280 or U.S. Highway 101; chemical delivery, yellow grease, and biosolids loadout via Jerrold Avenue to U.S. Highway 101	• Biosolids, chemical deliveries, yellow grease loadout (to/from site): Amador Street, Illinois Street, Cesar Chavez Street, U.S. Highway 101 • Grit/screening (to/from site): Amador Street, Illinois Street, Cesar Chavez Street, Pennsylvania Street (outbound only), Interstate 280	Same as project	Same as project
Energy Demand and Supplies	By 2045, all electricity demands of the SEP solids treatment process (4.9 megawatts) would be met by electricity produced by the energy recovery facilities (5.2 megawatts), with excess energy available to other SEP facilities. Standby energy would be available for use at the SEP during routine operations, emergencies, and power outages.	Up to 2 megawatts produced by existing energy recovery facilities would partially meet SEP solids treatment process energy demands; supplemental energy from Hetch Hetchy hydropower would be required.	Energy produced at the Pier 94 Backlands site would only be used on-site; no excess energy would be available, due to higher electrical demands related to additional pumping of dilute sludge and return streams to SEP. There would be no standby energy for use at the SEP during routine operation, emergencies, and power outages.	Same as project	Same as project
Construction of New Facilities or Relocation					
Duration and Schedule	Five years, February 2018 to January 2023	No planned construction for major facilities replacement, but construction would be expected to occur sporadically as needed. The diminishing reliability of existing solids processing facilities could result in unanticipated breakdowns and equipment failure, necessitating sporadic repair and replacement construction projects in the future.	Duration approximately same as project. Start date likely delayed by several years due to site acquisition.	Approximately 7 to 13 months for disassembly and transportation (to occur prior to BDFP construction) and 18 to 24 months for reassembly and rehabilitation of Central Shops Buildings A and B at the new site (to occur concurrent with BDFP construction). Total assumed construction duration: about six years.	Duration: At least seven years due to relocation of utilities under Quint Street (water lines, gas pipeline) and construction of interim solids treatment process facilities. Start date likely delayed by several years due to need to redesign project and site acquisition needs for vacating Quint Street.
Construction Hours	Typical: Monday through Friday, 7:00 a.m. to 3:30 p.m. Work could occur until 8:00 p.m. and on Saturdays and Sundays as needed. During peak construction for up to a year, two shifts per day with the second shift lasting until 11:00 p.m. if needed.	No planned construction; see above	Similar to project	Same as project Relocation of Buildings A and B: assumed to be standard Monday through Friday, 7:00 a.m. to 3:30 p.m.	Same as project
Construction Work Force (includes both management and contractor staff)	Typical: 100 to 550 persons, depending on construction activity	No planned construction; see above	Assumed to be 10 percent larger than project	Same as project for construction of BDFP facilities Relocation of Buildings A and B: 75 construction workers	Same as project

TABLE 6-1 (Continued)
COMPARISON OF PROJECT AND ALTERNATIVES

Characteristic	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Construction of New Facilities or Relocation (cont.)					
Temporary Road Closure	Jerrold Avenue between SEP entrance west of Phelps Street and Caltrain tracks	No planned construction; see above	Potential lane closures for pipeline installation	Same as project	Same as project
Temporary Relocation of Muni	Muni 23 Monterey route	No planned construction; see above	Potential rerouting of Muni Route 19 and Route 44 along Evans Avenue (three to five months)	Same as project	Same as project
Construction Haul Routes	Routing along Rankin Street, Evans Avenue, Cesar Chavez Street, Jerrold Avenue, Third Street, Cargo Way, and Amador Street to Interstate 280 or U.S. Highway 101. Haul trucks between pier staging and SEP. Construction worker shuttle between Pier 94 and SEP.	No planned construction, see above	Routing along Amador, Illinois, Cesar Chavez, and Pennsylvania Streets to Interstate 280 or U.S. Highway 101	Same as project	Same as project
Ongoing Operational Hauling from SEP During Construction	Routing along Jerrold Avenue, Phelps Street, Rankin Street, Evans Avenue, and Cesar Chavez Street	Same as existing condition	Same as existing condition	Same as project	Same as project
Demolition	Approximately 136,000 square feet of existing structures	No planned demolition	None required	Same as project Relocation of Buildings A and B: Assume existing buildings at 600 Amador Street would be demolished	Demolition of Building 871 in SEP North (same as project) No demolition of Central Shops Buildings A and B Additional demolition of SEP South Structures (780, 960 [partial], 785, 900, SS14, SS15, SS15A 770, 915A, 915B, 750, 891, 800, 880, 885, 995, 950, 860, SS17, 833, 840, 791, 832, 790, 962, 925, SS5A, SS5B, 870, 511), including below-grade structures and pipe galleries. Relocation of equipment and pipes would add extensive time and cost. Includes demolition of processes that are needed throughout construction; therefore, interim facilities need to be constructed (waste activated sludge thickening, biosolids dewatering and cake storage and loadout).
Site Preparation	Substantial excavation and subsurface construction, requiring subsurface excavation support Approximate excavation depth 20 to 30 feet, except for digesters (41 feet)	No planned construction	Similar to project. Additionally, site preparation could be more extensive because contamination exists due to existing stockpiling of concrete, soils, and debris, heavy metals, polycyclic aromatic hydrocarbons, petroleum hydrocarbons, methane; two closed hazardous sites; two active underground storage tanks (USTs).	Same as project Relocation of Buildings A and B: Standard construction methods, assumes no subsurface construction and minimal, if any, excavation	Same as project. In addition, site would require relocation of utilities under Quint Street and construction of interim treatment processes.
Construction Methods	Standard construction methods, including pile driving	No planned construction	Standard construction methods, including pile driving Cut-and-cover for pipelines connecting to the SEP; bore and jack for pipeline construction at Third Street and railroad tracks near Cargo Way to reduce disruption of transportation	Same as project Relocation of Buildings A and B: Standard construction methods but consistent with Secretary of Interior's Standards for historic structures	Same as project
Construction Dewatering	Groundwater dewatering system required to provide dry work area; volume of groundwater produced is unknown. Groundwater would be tested, pre-treated as necessary, and discharged to the combined sewer system for treatment at the SEP.	No planned construction	Groundwater dewatering needed similar to project	Same as project	Same as project

TABLE 6-1 (Continued)
COMPARISON OF PROJECT AND ALTERNATIVES

Characteristic	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Permits and Approvals					
Permits and Approvals Needed	• SWRCB Construction General Permit and SWPPP • SWRCB, consideration for Clean Water State Revolving Fund (SRF) loan • State Historic Preservation Officer, Section 106 Memorandum of Agreement (MOA) (for SRF loan) • SFPW approval of sidewalk changes and street improvement permit • San Francisco Board of Supervisors approval of sidewalk legislation • SFMTA approval of on-street parking legislation • BAAQMD authority to construct and permit to operate • San Francisco Port Commission, approval to use Pier 94 and /or Pier 96 for construction staging	No new permits or approvals anticipated, but SFPUC would continue to comply with existing and future permits.	• SWRCB Construction General Permit and SWPPP • SWRCB consideration for Clean Water State Revolving Fund loan • BAAQMD authority to construct and permit to operate • San Francisco Port Commission, approval to use Pier 94 for long-term facilities and approval to amend the Waterfront Land Use Plan • State Lands Commission approval and possibly California legislature • RWQCB approval prior to excavation or reconfiguration of waste at regulated landfill at Pier 94	• Same as project	Same as project, plus • Board of Supervisors for Street Vacation • Possible CPUC/PG&E for gas line relocation

NOTES:

BAAQMD = Bay Area Air Quality Management District
BDFP = Biosolids Digester Facilities Project
CPUC = California Public Utilities Commission
Muni = San Francisco Municipal Railway
n/a = not applicable
PG&E = Pacific Gas and Electric Company
RWQCB = Regional Water Quality Control Board
SEP = Southeast Water Pollution Control Plant
SFMTA = San Francisco Municipal Transportation Agency
SFPW = San Francisco Public Works
SWPPP = Stormwater Pollution Prevention Plan
SWRCB = State Water Resources Control Board
THP = thermal hydrolysis process

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TABLE 6-2
SUMMARY OF ABILITY OF PROJECT AND ALTERNATIVES TO MEET PROJECT OBJECTIVES

Project Objective	Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
	Would the project or alternative meet the objective?				
1. Replace the existing solids treatment facilities at the SEP with new infrastructure with modern and more efficient treatment technologies to protect public health and safety and provide continued regulatory compliance.	Yes	No	Yes	Yes	Yes
2. Maximize the efficiency of the current treatment process operations and maintenance, staffing resources, and the use of existing SFPUC infrastructure.	Yes	Partial	No (Redundant equipment, facilities would be required at new location)	Yes	Yes
3. Reliably meet treatment capacity for projected 2045 flows and loads associated with projected population growth.	Yes	No	Yes	Yes	Yes
4. Beneficially use 100 percent of biosolids generated.	Yes	No	Yes	Yes	Yes
5. Beneficially use 100 percent of digester gas generated.	Yes	No	Yes	Yes	Yes
6. Build critical processes with redundant infrastructure to provide reliability and operational flexibility.	Yes	No	Partial (No plant-wide operations center or standby power)	Yes	Yes
7. Improve seismic reliability.	Yes	No	Yes	Yes	Yes
8. Limit noticeable odors from BDFP facilities to the SEP property boundary.	Yes	No	Yes	Yes	Yes
9. Provide visual improvements that promote a cohesive architectural design and identity at the BDFP site, enhance the overall aesthetics, and improve the public edges in a manner consistent with the surrounding neighborhood and the rest of the SEP.	Yes	No	No	Yes	Yes
10. Design and site new facilities to accommodate or adapt to expected sea level rise over their expected life.	Yes	No	Yes	Yes	Yes

TABLE 6-2 (Continued)
SUMMARY OF ABILITY OF PROJECT AND ALTERNATIVES TO MEET PROJECT OBJECTIVES

Project Objective	Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
	Would the project or alternative meet the objective?				
11. Allow for timely construction of the BDFP.	Yes	n/a	No (Due to land availability uncertainties)	Partial (Extended construction schedule estimated to be about one year longer than project)	No (Due to extended construction duration plus extended delay in start date for re-design)
12. Maintain rate payer affordability.	Yes	Unknown (Long-term financial implications unknown)	Unknown (Due to land availability uncertainties)	Unknown (Due to unknown additional costs related to relocation uncertainties)	No (Due to substantial increase in construction requirements and need for revised design)

NOTES:
BDFP = Biosolids Digester Facilities Project
n/a = not applicable
SEP = Southeast Water Pollution Control Plant
SFPUC = San Francisco Public Utilities Commission

6.3.1 Alternative A: No Project

6.3.1.1 Description

As required by CEQA Guidelines Section 15126.6(e), the No Project Alternative is evaluated to allow decision-makers to compare the environmental effects of approving the project with the effects of not approving the project. The No Project Alternative, as described below, represents what would reasonably be expected to occur in the foreseeable future if the project were not to be approved. This would be considered a full preservation alternative with respect to Central Shops Buildings A and B, an identified individual historical resource. In addition, this alternative would avoid the project's significant and unavoidable cumulative impact on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. This alternative would also avoid the significant and unavoidable construction-related air quality impact of the proposed project.

Construction

Under the No Project Alternative, the BDFP would not be constructed and the SFPUC would continue to operate and maintain the existing SEP solids treatment and energy recovery facilities indefinitely. The SFPUC has an immediate need in the vicinity of the SEP for an area of at least six acres for storage of equipment and vehicles and temporary relocation of existing uses while it undertakes scheduled repair and replacement projects at the SEP, and has already acquired jurisdiction of the Asphalt Plant site and is in the process of acquiring the Central Shops site to support this need. The SFPUC also has a longer-term, continuing need for staging to support upgrades to the SEP and sewer system as part of its SSIP. The SFPUC would not demolish Central Shops Buildings A and B under the No Project Alternative.

Digester Gas, Energy Recovery and Biosolids Production

Under the No Project Alternative, the energy recovery capacity and the biosolids quality would remain the same as under existing conditions. In the future, biosolids volumes are expected to increase due to planned population growth with a concomitant increases in digester gas volumes, but the existing energy recovery facilities (internal combustion engine, hot water boilers, and waste gas burners) would not have the capacity to capture the energy production potential of the increases in digester gas volumes. The waste gas burners would operate more frequently than under existing conditions, and there would be more frequent flaring over time due to the increased loadings.

The future annual production of biosolids is estimated to be 27,700 dry tons by 2045 under the No Project Alternative, compared to 24,000 dry tons under the project, due to the lower efficiency of the existing processes. Digester gas production would be less under the No Project Alternative (1.3 to 1.7 million cubic feet per day from 2023 to 2045 compared to 1.6 to 2.0 million cubic feet per day for the same period under the BDFP), and energy generation would be limited to up to 2.0 megawatts (MW), compared to 4.2 to 5.2 MW for the project. Because the energy recovery facilities would not be replaced, the SEP would not generate surplus energy. The amount of energy generation under the No Project Alternative would only partially meet the SEP solids treatment process energy demands and, as under existing conditions, supplemental energy from Hetch Hetchy hydropower would continue to be required (refer to Chapter 2, Table 2-8). In the future, with the projected increase in SEP electricity demands, the SFPUC would need to increase its use of electricity from Hetch Hetchy hydropower from about 0.32 MW in 2014 up to 2.9 MW by 2045.

The biosolids produced from the solids treatment process would continue to be Class B, and would still contain detectable levels of pathogens. In the future, Class B biosolids likely will have increasingly limited reuse options. In the long term, the No Project Alternative could require transport of the biosolids over greater distances for reuse or disposal, compared to both existing conditions and the proposed project.

Odor Control

Under the No Project Alternative, the odor control systems for solids handling facilities would continue to consist of adsorption units at the gravity belt thickeners, centrifuge building, and cake loadout facilities. As described in Chapter 2, Section 2.2.2, Southeast Water Pollution Control Plant, the existing SEP odor control units are not capable of completely containing odors within the SEP fence line, and this condition would be expected to continue under this alternative.

Maintenance and Repair

Many of the existing solids treatment facilities are over 60 years old and operating well beyond their useful life. Consequently, under the No Project Alternative, the SFPUC would need to implement an increased frequency of maintenance compared to either existing or future-with-project conditions, and would need a more rigorous program to repair and replace facilities for reliable operations. For example, each of the working digesters would need to be taken out of service more frequently for grit removal procedures in order to maintain adequate operating conditions. Up to five additional permanent staff over the existing condition would be needed to accommodate the increased maintenance requirements.

In addition to increased maintenance, increased levels of repair and replacement of equipment and facilities would ultimately be required for reliable operations and continued compliance with regulatory requirements, reducing the efficiency of the current treatment process operations and maintenance and staffing resources. The Needs Assessment Report[7] for the BDFP and a 2013 condition assessment[8] that preceded it document the performance and condition of 23 separate existing structures involved in solids handling. The Needs Assessment Report found that, in addition to failing to meet the SSIP levels of service goals, many individual structures and facilities lack redundancy, are structurally inadequate (e.g., concrete structures exhibited cracking, leakage, and spalling), are seismically unreliable, do not provide adequate treatment capacity for projected 2045 flows and loads, and use equipment that (due, for example, to corrosion) require major maintenance, repair, or replacement. Structures and equipment that would be expected to require major repair and/or replacement under the No Project Alternative include the secondary sludge thickening pumps, gravity belt thickeners, digesters, digester pumps and associated equipment, centrifuges, centrifuge pumps, bin hoppers, gas booster

7 SFPUC, *Needs Assessment Report: Southeast Water Pollution Control Plant Biosolids Digester Facilities, Draft Final*, January 2016.
8 SFPUC, *Southeast Water Pollution Control Plant Condition Assessment Report (Final)*, 2013.

station equipment, gas handling systems components, and the electrical system. In the future as equipment continues to age and deteriorate, the SFPUC would also need to conduct more frequent assessments to determine the integrity of the individual facilities and pieces of equipment, so that the SFPUC could take actions as appropriate to repair and/or replace individual failing facilities and equipment.

To the extent possible, the SFPUC would repair facilities to avoid complete failure. However, it is not feasible to seismically retrofit the existing digesters without completely rebuilding them,[9] so this alternative assumes that no seismic improvements to the digesters would occur.

Risk of Upset

The No Project Alternative would have the same risk of upset compared to existing conditions, but a much higher risk of upset than the proposed project. The seismic hazards at the existing solids processing facilities would persist. The existing facilities are not built to current seismic standards, nor are they designed for future sea level rise considerations. Thus, long-term continued use of the existing solids treatment facilities under the No Project Alternative would result in an increasing risk of failure and shutdown the longer this equipment is used. As described in a 2013 condition assessment, the current conditions of the solids processing facilities include inadequate and deteriorated piping and equipment supports and anchorages, soft story[10] buildings/structures, and plan irregularities.[11] If an earthquake of substantial size and in proximity to the SEP were to occur, the risk of failure of one or more digesters (in addition to other structures at the SEP) would be the same as under existing conditions, but as the digesters continue to age and deteriorate, this risk of failure would be expected to increase compared to existing conditions because the existing digesters are not seismically reinforced. With the increased level of maintenance, it is unlikely that all of the digesters and other equipment would fail at once; however, a seismic event in the SEP vicinity could have severe consequences. In such an event, potential simultaneous failure of multiple solids treatment facilities and equipment could be catastrophic and could result in large volumes of undigested sludge that would require special transport and disposal.

In addition to increased likelihood of physical damage and release during an earthquake, failure of portions of the SEP could reduce the efficacy of wastewater and solids treatment by limiting the facilities available for wastewater processing. If one or more of the digesters were to become non-operational, SEP staff would need to modify the liquid wastewater treatment processes to reduce solids production, which could affect the ability of the SEP to protect San Francisco Bay water quality. The SFPUC's ability to treat wastewater would then be compromised, with implications for public health and safety as well as regulatory permit violations.

9 SFPUC, *Needs Assessment Report: Southeast Water Pollution Control Plant Biosolids Digester Facilities, Draft Final*, January 2016.

10 "Soft story" buildings are so called because they have first stories that are much less rigid than the stories above. These buildings are typically susceptible to earthquake damage due to the large unreinforced openings of the ground floors and the typically wood-frame construction. Without reinforcement, these buildings generally cannot withstand lateral earthquake forces.

11 Plan irregularity expresses the extent that a building shape differs from a "regular" simple box-shaped building. Irregularities are believed to contribute to poor seismic performance and occasional failure.

If any of the major components of the biosolids facilities were to fail, the SEP would not be able to achieve Class B quality biosolids. The SFPUC would have to send the biosolids to another party for further treatment or distribution or otherwise find alternative disposal options for partially or undigested sludge.

6.3.1.2 Ability to Meet Project Objectives

The No Project Alternative would fail to meet most, if not all, of the BDFP objectives. The No Project Alternative would not replace the existing aging facilities with new modern and more efficient treatment technologies, would use equipment beyond its useful life, would not provide facilities that would reliably treat 2045 flows and loads, would not beneficially use 100 percent of the biosolids and biogas generated, would not provide redundant infrastructure for operational flexibility, would not improve seismic reliability, would not limit noticeable odors to the SEP property boundary, would not make visual improvements to the BDFP site, and would not accommodate or adapt to expected future sea level rise. Due to the uncertainties associated with future facilities and equipment failures and potential catastrophic breakdown, it is unknown if, in the long term, the No Project Alternative would maintain rate payer affordability. However, despite the continued use of outdated equipment beyond its useful life, the SFPUC would continue to maximize the efficiency of the current operations and maintenance, staffing resources, and use of existing SFPUC infrastructure, partially meeting Objective #2.

The No Project Alternative would also fail to achieve the goals of the SFPUC's SSIP by not providing a reliable, flexible system that can respond to catastrophic events; by not integrating green and grey infrastructure to manage stormwater and minimize flooding, by not providing benefits to affected communities (compared to existing conditions); by not modifying the system to adapt to climate change; and by not achieving economic and environmental sustainability through 100 percent use of biosolids and biogas.

6.3.1.3 Environmental Impacts

The No Project Alternative would avoid the significant and unavoidable impacts related to historical resources and construction-phase NOx emissions identified for the project in Chapter 4, *Environmental Setting and Impacts*. Under "normal" conditions (without breakdowns and equipment failure), the No Project Alternative would avoid all construction and operational impacts that were identified for the project, but under possible future scenarios with breakdowns and equipment failures, a wide range of impacts could occur, depending on the nature and extent of those breakdowns. As discussed below, in a few resource areas, there could be distinct environmental impacts compared to the proposed project, but in most impact areas there would either be no impacts or similar impacts to those of the proposed project.

Most Resource Areas

The No Project Alternative would avoid all construction activities and operational changes that would occur under the proposed project, and therefore it would result in *no impacts* in the following areas: Land Use, Population and Housing, Transportation and Circulation, Wind/ Shadow, Recreation, Utilities, Public Services, Biological Resources, Geology/Soils/Paleontological Resources, Hazards, Mineral Resources, and Agricultural/Forest Resources. Although this alternative would require a slight increase in staffing for the increased maintenance requirements, the estimated increase in staffing (up to five persons) would be a negligible increase from existing staffing levels (less than two percent), with negligible effects on environmental impacts in any of the above-listed resource areas compared to existing conditions.

As described above, the No Project Alternative would have a long-term higher risk of upset than existing conditions or the proposed project. In the event of a breakdown or equipment failure, there could be sporadic repair and replacement construction projects at the SEP South, where the existing digesters are located. In such cases, construction impacts on the above-listed resource areas would be expected to be similar to those identified for the proposed project, though at a reduced scale (because repairs and replacement would occur on an as-needed basis, rather than as one all-encompassing construction project). Upon completion of any needed repairs or equipment replacement, operations are assumed to continue to be similar to existing conditions, and there would be no operational impacts in these resource areas.

Aesthetics

The No Project Alternative would avoid all construction impacts, including temporary, minor effects on visual character and light and glare impacts that would occur under the proposed project. In the event that emergency equipment repairs or replacements are required, any construction would be subject to the same SFPUC standard construction measures requiring siting construction staging away from public view where possible and directing any nighttime lighting away from residential areas. Therefore, as with the proposed project, aesthetic impacts during construction would be less than significant. With regard to operational impacts, outside of routine maintenance, this analysis presumes that there would not be any substantial improvements to the existing structures beyond basic repairs and maintenance, or if replacement were to be required, any replacement equipment is assumed to be similar in size and locations as the existing equipment. Similarly, under No Project Alternative, existing landscaping would be maintained with no substantial improvements. Thus, similar to the proposed project, the No Project Alternative would have less-than-significant long-term (operational) aesthetics impacts.

Cultural Resources

The No Project Alternative would not demolish Central Shops Buildings A and B or Building 870. It would continue use of the existing digesters and associated control buildings. This would avoid the significant and unavoidable impacts on individual historical resources (Central Shops Buildings A and B) and on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. This alternative would also avoid the project's significant but mitigable effects on archeological resources and on human remains.

As part of an action separate from the project, the San Francisco General Services Agency is in the process of relocating the Central Shops operations and transferring the site to the SFPUC, and this process is assumed to proceed under the No Project Alternative. The SFPUC has identified the use of the Central Shops to store equipment and vehicles and temporarily relocate existing uses while it undertakes scheduled repair and replacement projects. For the purposes of this alternatives analysis, it is assumed that the SFPUC would neither demolish nor alter this historic resource; thus, under the No Project Alternative, the resources would retain the physical characteristics that convey its historical significance and that justify its individual eligibility for inclusion in the California and National Registers. Furthermore, it is assumed that continued use of the existing digesters and associated control buildings would retain the historic integrity of the eligible historic district. Therefore, unlike the proposed project, the No Project Alternative would have no impact on historic resources.

However, as described above, the No Project Alternative would have a higher risk of upset than the proposed project, and an increasingly higher risk of upset as continued, prolonged use of the existing digesters occurs. Although not an impact *per se*, the increased likelihood of physical damage to the existing digesters under this alternative could result in future catastrophic damage to these structures, which could affect the historic integrity of the historic district.

Noise and Vibration

Under "normal" conditions (without breakdowns and equipment failure), the No Project Alternative would avoid all construction-related noise impacts that were identified for the project. However, major repair projects and replacement of some structures and equipment ultimately would be necessary in the future, but the magnitude and duration of the associated construction requirements cannot be predicted at this time. These repair and replacement projects likely would generate construction noise and vibration impacts similar to those of the project, but the impacts would be associated with repair/replacement of existing biosolids treatment facilities located at SEP South. The existing digesters and energy recovery facilities are closer to residential receptors to the east (less than 100 feet away) and the daycare facility (about 350 feet to the south), compared to the facilities under the project (e.g., the proposed digesters would be approximately 1,000 feet away from residential receptors and 1,500 feet away from the daycare facility). Therefore, it is possible that construction-related noise levels could occasionally be higher (and significant) at these residences and at the daycare facility, compared to levels predicted to occur under the proposed project, both on a project and cumulative level; if such construction activities were to be subject to CEQA, mitigation measures similar to those identified for the proposed project would be required to reduce the impact to less than significant. While construction noise generated during each individual repair would be shorter in duration than the project's five-year construction duration, the overall, long-term duration of ongoing repair/replacement activities under the No Project Alternative, including major repairs, could exceed well beyond five years.

Vibration impacts of the No Project Alternative could be less than those of the proposed project if ongoing repair activities were to involve less intensive construction activities, and pile-driving was avoided altogether. Construction associated with the existing digesters, would be required and could occur less than 100 feet from sensitive receptors to the east, and there could be intensive construction activities required, similar to those of the proposed project; for these reasons, vibration levels could exceed the strongly perceptible threshold for human annoyance, a potentially significant impact.

Operational noise levels under this alternative would be the same as existing conditions, and therefore there would be no impact.

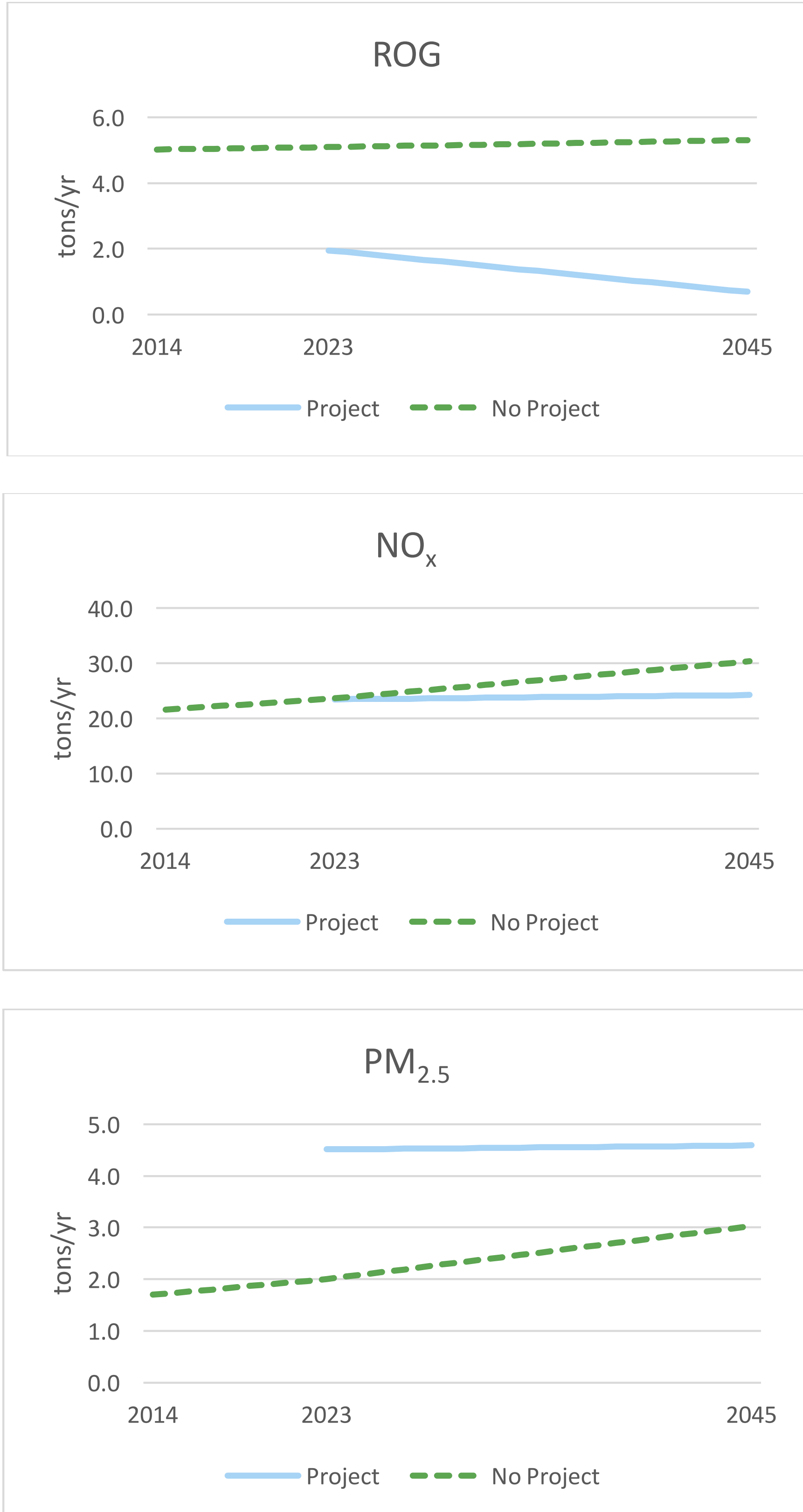
Air Quality

Under normal conditions, the No Project Alternative would avoid all construction-related air quality impacts that were identified for the project. Major repair projects and replacement of some structures and equipment ultimately would be necessary in the future, but the magnitude and duration of the associated construction requirements cannot be predicted at this time. These repair and replacement projects would generate the same type of construction-phase air pollutant emissions as the proposed project, although the impacts would be associated with repair/replacement of facilities at SEP South. Daily emissions of criteria air pollutants (such as NOx from construction equipment and vehicles) as well as toxic air contaminants (e.g., diesel particulate matter [DPM] from diesel equipment and vehicles) would most likely be less under the No Project Alternative than under the project because the amount of construction would most likely be less; therefore, construction-phase air pollutant impacts for the No Project Alternative are assumed to be less than significant. If large-scale repair/replacement of structures became necessary, construction-related air pollutant emissions could still exceed significance thresholds, and if such construction activities were to be subject to CEQA, Mitigation Measures M-AQ-1a (Construction Emissions Minimization) and M-AQ-1b (Emission Offsets) could still be required.

Regarding operational air quality impacts, as indicated in Table 6-1, there will be future increases in biosolids loading (associated with planned population growth). Consequently, compared to existing conditions, there will be increased operational air pollutant emissions in the future associated with increased biosolids and digester gas processing volumes, even without implementation of the project. On behalf of the San Francisco Planning Department, Ramboll-Environ[12] conducted an analysis of future estimated operational air pollutant emissions without the project, and a comparison of criteria pollutant emissions under the No Project Alternative versus the project is presented on **Figure 6-1**. As indicated on this figure, the No Project Alternative is projected to result in higher reactive organic gas (ROG) and NOx operational emissions than the project due to the increase in digester gas that would be generated from the increased loadings and older equipment being used. However, the No Project Alternative would have lower operational emissions of particulate matter of 2.5 microns in diameter or less ($PM_{2.5}$) than the proposed project, largely due to the project's operation of turbines which have higher emission factors than the existing cogeneration engines that would be used under the No Project Alternative.[13] The increase in $PM_{2.5}$ operational emissions under the proposed project should be considered on balance with the increased energy that would be generated from digester gas production. Nevertheless, under

[12] Ramboll-Environ, April 2017**.** Memorandum, San Francisco Public Utilities Commission SFPUC Biosolids Digester Facilities Project (BDFP) No Project Alternative Air Quality.

[13] The estimated future increase in $PM_{2.5}$ associated with operation of the proposed turbines depicted on Figure 6-1 is not expected to actually occur to the degree indicated on the figure because the turbine emissions are based on a manufacturer-guarantee not-to-exceed emission factor for the proposed turbine, which is conservative. The turbine emissions should never exceed this value, and the turbines would likely operate with much lower emissions.



SOURCE: Ramboll Environ, San Francisco Public Utilities Commission (SFPUC) Biosolids Digester Facilities Project (BDFP) No Project Alternative Air Quality Analysis, April 2017.

SFPUC Biosolids Digester Facilities

Figure 6-1
Comparison of Project Air Pollutant Emissions to No Project Alternative Emissions

both the No Project Alternative and the proposed project, net operational criteria pollutant emissions (ROG, NOx, and $PM_{2.5}$) would remain below significance threshold levels and therefore would be less than significant.[14] With respect to toxic air contaminants and health risk, as described in Section 4.8.1.4 (in Section 4.8, Air Quality), the project site and its vicinity are located in the Air Pollutant Exposure Zone (APEZ) and Health Vulnerability zip code 94124, which indicates that the area already experiences poor air quality due to emissions from various stationary and mobile sources in the area. Existing sources of toxic air contaminant emissions from solids processing (the cogeneration engine, sludge handling process unit, the digesters, waste gas burners, dewatering facility, and hot water boilers) would continue to operate under the No Project Alternative. As shown in Figure 6 1, $PM_{2.5}$ emissions would be lower than with the proposed project, and toxic air contaminant emissions (such as DPM emissions) also would likely be less. Overall, like the project, the No Project Alternative would not expand the boundaries of the APEZ.

As stated above, the No Project Alternative could require transport of the biosolids over greater distances for reuse or disposal, compared to both existing conditions and the project, which could result in long-term increases in air pollutant emissions associated with the increased hauling distances. Nevertheless, this is not expected to be a substantial increase in emissions, and operational air quality impacts are assumed to be less than significant.

While this alternative would avoid the project's conflicts with the Clean Air Plan due to significant and unavoidable construction-related emissions, this alternative would not be consistent with the Clean Air Plan's Policy ECM 2, which promotes energy efficiency and renewable energy for purposes of air quality and climate protection, since the No Project Alternative would not have the ability to recover the associated increase in energy potential of 3.9 MW (refer to Chapter 2, Table 2-8) beyond the 2-MW capacity of the existing energy recovery facilities. Similarly, it is unknown whether continued reliance on existing solids treatment facilities would be consistent with Measure WR1 of the *2017 Clean Air Plan* (currently in draft form). Measure WR1 specifically calls for limiting GHGs from, and promoting the use of digester gas recovery systems at publicly owned treatment works like the SEP.

Cumulative construction-related air quality impacts would be less severe than those of the proposed project, but the impacts would not be completely avoided because repair/replacement construction activities, such as repair or replacement of existing digesters, would contribute to cumulative increases in construction-related criteria pollutant and toxic air contaminant emissions (and therefore, health impacts). Nevertheless, due to the unknown schedule for the repair/ replacement activities, it is assumed that, because construction activities would be less intensive than those for the proposed project, the contribution of construction-related air quality impacts to cumulative impacts would be less than significant.

[14] Net emissions are future No Project or future BDFP emissions minus existing emissions (that is, emissions relative to today).

Greenhouse Gas Emissions

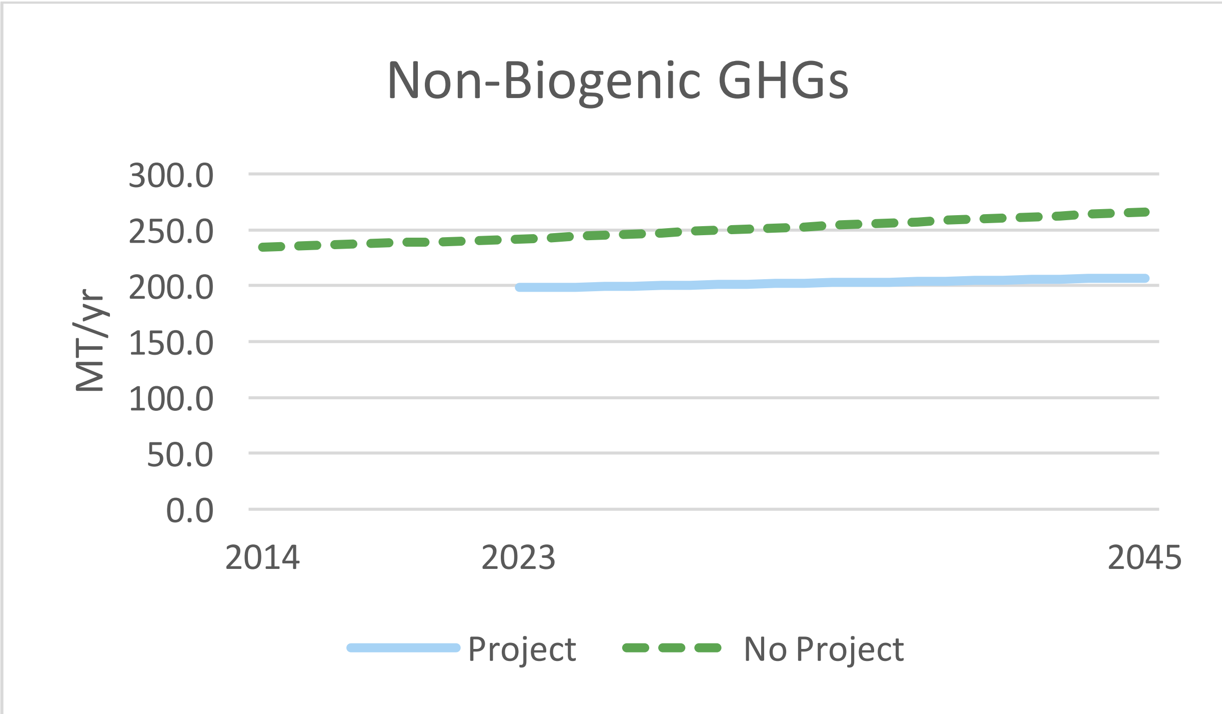
As described above, in the future under the No Project Alternative, the SEP would have increased biosolids loading over existing conditions due to anticipated population growth, and there would be an associated increase in digester gas production. By not using the increase in energy potential available from the increase in digester gas production (and not improving biosolids reuse opportunities), the No Project Alternative would not be consistent with adopted policies intended to reduce statewide greenhouse gas (GHG) emissions, including increasing renewable portfolio standards for electricity (see Chapter 4, Section 4.9, Greenhouse Gas Emissions). Therefore, the No Project Alternative would not be consistent with policies adopted for the purpose of reducing GHG emissions, and unlike the proposed project, would have a potentially significant impact on GHG emissions. Mitigation measures such as improvements to existing or construction of new energy recovery facilities would be needed to reduce the impact to less than significant.

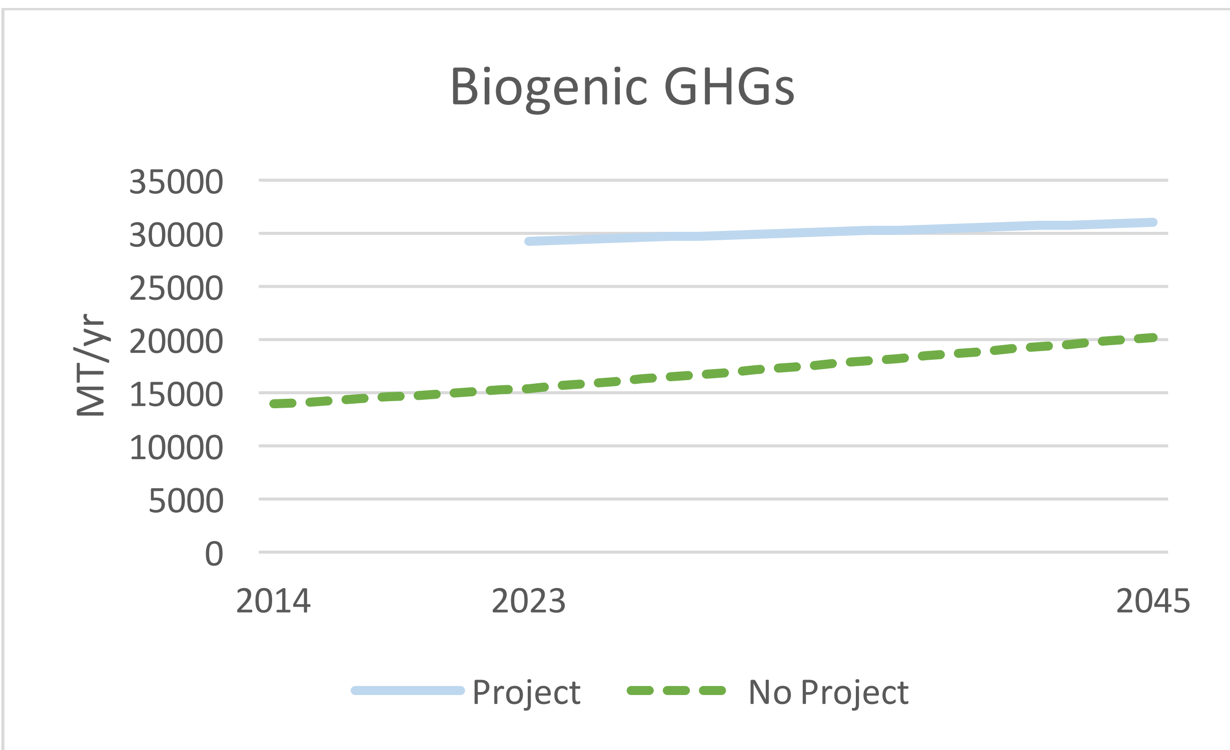
Figure 6-2 presents a comparison of biogenic and non-biogenic GHG emissions. This figure indicates that, between 2014 and 2045, operational non-biogenic and biogenic GHG emissions under the No Project Alternative and the proposed project would increase, but the rate of increase would be greater under the No Project Alternative. Under the No Project Alternative, the non-biogenic emissions would increase from 234 metric tons of carbon dioxide-equivalent ($MTCO_2E$) per year to 266 $MTCO_2E$ per year, a net increase of 32 $MTCO_2E$ per year by 2045. Under the project, non-biogenic emissions would increase slightly from 198 $MTCO_2E$ per year to 207 $MTCO_2E$ per year (9 $MTCO_2E$ per year) by 2045. While the net increase would be greater under the No Project Alternative than under the proposed project, non-biogenic emissions under this alternative as well as under the proposed project would be less than significant, well below the Bay Area Air Quality Management District (BAAQMD) guidance threshold of 10,000 $MTCO_2E$ per year for a stationary source.

Hydrology and Water Quality

Under "normal" conditions (without breakdowns and equipment failure), the No Project Alternative would have none of the impacts on hydrology or water quality that were identified for the project during either construction or operation. However, this alternative would have a much higher risk of upset than the proposed project, and long-term continued use of the existing solids treatment facilities under the No Project Alternative would result in an increasing risk of failure and shutdown the longer this equipment is used. For example, because the existing facilities are not built to current seismic standards, a seismic event in the SEP vicinity could have severe consequences. In such an event, potential simultaneous failure of multiple solids treatment facilities and equipment could be catastrophic and could result in large volumes of undigested sludge that reduce the ability of wastewater and solids treatment processes to achieve water quality objectives and discharge limits required to protect San Francisco Bay water quality.

Furthermore, even without a catastrophic event, the No Project Alternative would be expected to require major repair and replacement of some structures and equipment in the future, with associated construction activities. This analysis presumes that construction impacts on hydrology and water quality would be similar to, or less severe than, those identified for the proposed project, depending on the magnitude and extent of construction activities.





SOURCE: Ramboll-Environ, San Francisco Public Utilities Commission (SFPUC) Biosolids Digester Facilities Project (BDFP) No Project Alternative Air Quality Analysis, April 2017.

SFPUC Biosolids Digester Facilities

Figure 6-2
Comparison of Proposed Project GHG Emissions to No Project Alternative Emissions

As described in Chapter 4, Section 4.16, Hydrology and Water Quality, a water quality analysis conducted for the project identified changes in water quality of the SEP effluent that are expected to occur in the future due to planned population growth, independent of the proposed project. The study indicated that increased concentrations of total ammonia and nitrogen are expected to occur under the No Project Alternative. Total ammonia concentrations (95th percentile) are projected to increase from 53.7 to 68.5 milligrams per liter (mg/L_ between 2015 and 2045 (with the BDFP, the increase would be to 69.8 mg/L), which is well below the National Pollutant Discharge Elimination System (NPDES) limitation of 190 mg/L; total nitrogen concentrations (95th percentile) are projected to increase from 65.1 to 82.9 mg/L between 2015 and 2045 (with the BDFP, the increase would be to 85.2 mg/L). By comparison, the proposed project would result in a slightly greater increase in both total ammonia and nitrogen concentrations in the effluent than the No Project Alternative, but in either case, the increase would be well below the permit limitation and the impact would therefore be less than significant.

Energy

As described above, in the future under the No Project Alternative, biosolids loading at the SEP would increase compared to existing conditions due to anticipated population growth, and there would be an associated increase in digester gas production. In the future, the existing energy recovery facilities at the SEP could produce up to 2 MW (an increase of 1 MW over existing conditions), which would partially meet SEP solids treatment process energy demands. Supplemental energy from Hetch Hetchy hydropower would still be required to meet future electricity demands of 4.4 MW and 4.9 MW in 2023 and 2045, respectively (refer to Chapter 2, Table 2-8). Thus, the SFPUC would not be able to use all of the increased digester gas that would be generated due to increased loadings of biosolids associated with population growth, and the No Project Alternative would require more frequent routine flaring over time, compared to existing conditions. (Under the proposed project, no routine flaring of biogas would occur.) Although the increased use of Hetch Hetchy hydropower that would occur under this alternative would continue the use of renewable energy sources, it would not maximize use of the increase in on-site energy resources, nor would it make Hetch Hetchy renewable energy available to replace non-renewable energy demand elsewhere. In addition, the No Project Alternative would not improve biosolids reuse opportunities. Unlike the proposed project, the No Project Alternative would not maximize the energy recovery and therefore would have a potentially significant impact due to this loss of the future increase in energy potential. Construction of modern, more efficient energy recovery facilities, similar to those under the proposed project, would reduce this impact to less than significant, although construction of those facilities would result in impacts similar to those identified for the proposed project.

6.3.2 Alternative B: Pier 94 Backlands

6.3.2.1 Description

Alternative B, the Pier 94 Backlands Alternative, would involve constructing BDFP facilities at the Pier 94 Backlands, which is the same site as one of the potential staging areas under the proposed project. Under this alternative, no construction or demolition activities would occur at the project site, and Central Shops Buildings A and B would be retained in place. This alternative was selected for evaluation because it would avoid a significant impact on a historical resource, was recommended by the Southeast Digester Task Force as an alternative location for biosolids processing,[15,16] and would analyze impacts at an alternative location consistent with CEQA Guidelines Section 15126.6(f)(2). This would be considered a full preservation alternative with respect to an identified individual historical resource. However, this alternative would neither reduce nor avoid the significant and unavoidable cumulative impact on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*.

This alternative is similar to an option previously developed by the SFPUC as described in Section 6.2.1.1 above. It would consist of constructing essentially the same solids handling, odor control, energy recovery and associated facilities as the proposed project but at the Pier 94 Backlands site. This alternative would also require construction and operation of multiple pipelines to convey sludge and other materials between the Pier 94 Backlands site and the SEP. Under this alternative, the SFPUC would have to acquire the Pier 94 Backlands site from the Port of San Francisco (Port), and the California State Lands Commission would have to make a public trust determination.

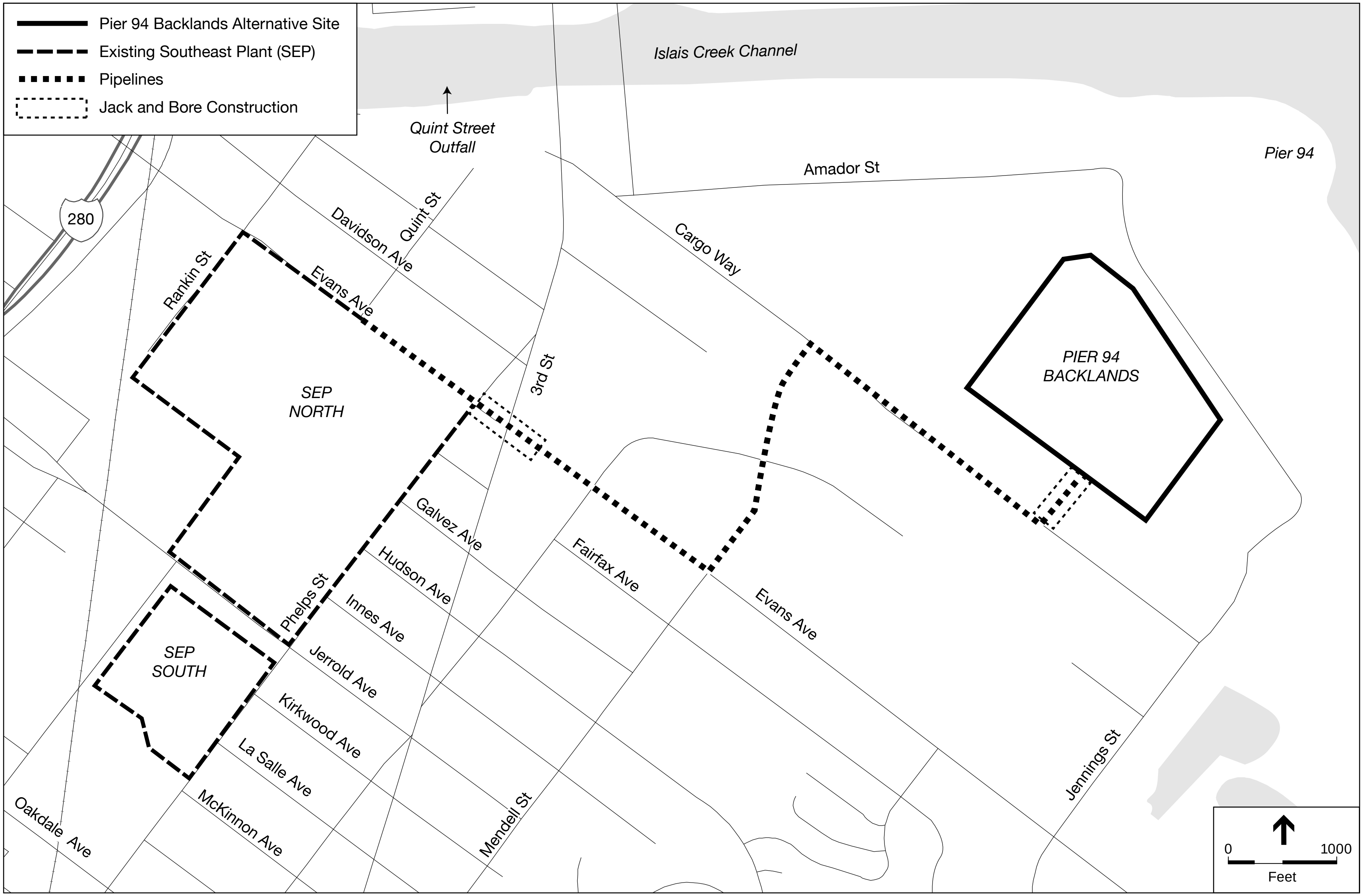
Site Location

Pier 94 Backlands

Figure 6-3 shows the location of the Pier 94 Backlands Alternative, and **Figure 6-4** depicts the conceptual site plan. Solids handling, energy recovery, and related facilities would be constructed on approximately 15 acres within the 27-acre Pier 94 Backlands area, located south and west of Amador Street, north of Jennings Street, and east of Cargo Way, about 0.75 mile southwest of the SEP (refer to Chapter 2, Figure 2-13). The Pier 94 Backlands is the same site as one of the staging areas for the BDFP described in Chapter 2; information on existing conditions at the Pier 94 Backlands and plans and policies applicable to its proposed use during construction are presented throughout Chapters 2, 3, and 4 of this EIR. Information relevant to its use as a permanent location for biosolids facilities as applicable to this alternative is summarized below.

Site Acquisition and Availability. The Pier 94 Backlands is owned by the City and administered by the Port.[17] Most of the Port's property including the Pier 94 Backlands consists of former tidelands held in public trust for the people of California.[18] The Public Trust Doctrine[19] holds that trust lands belong to the public and should be used in ways that connect people to the water: water-related commerce, navigation, fisheries, and other uses that require waterfront access to operate, as well as

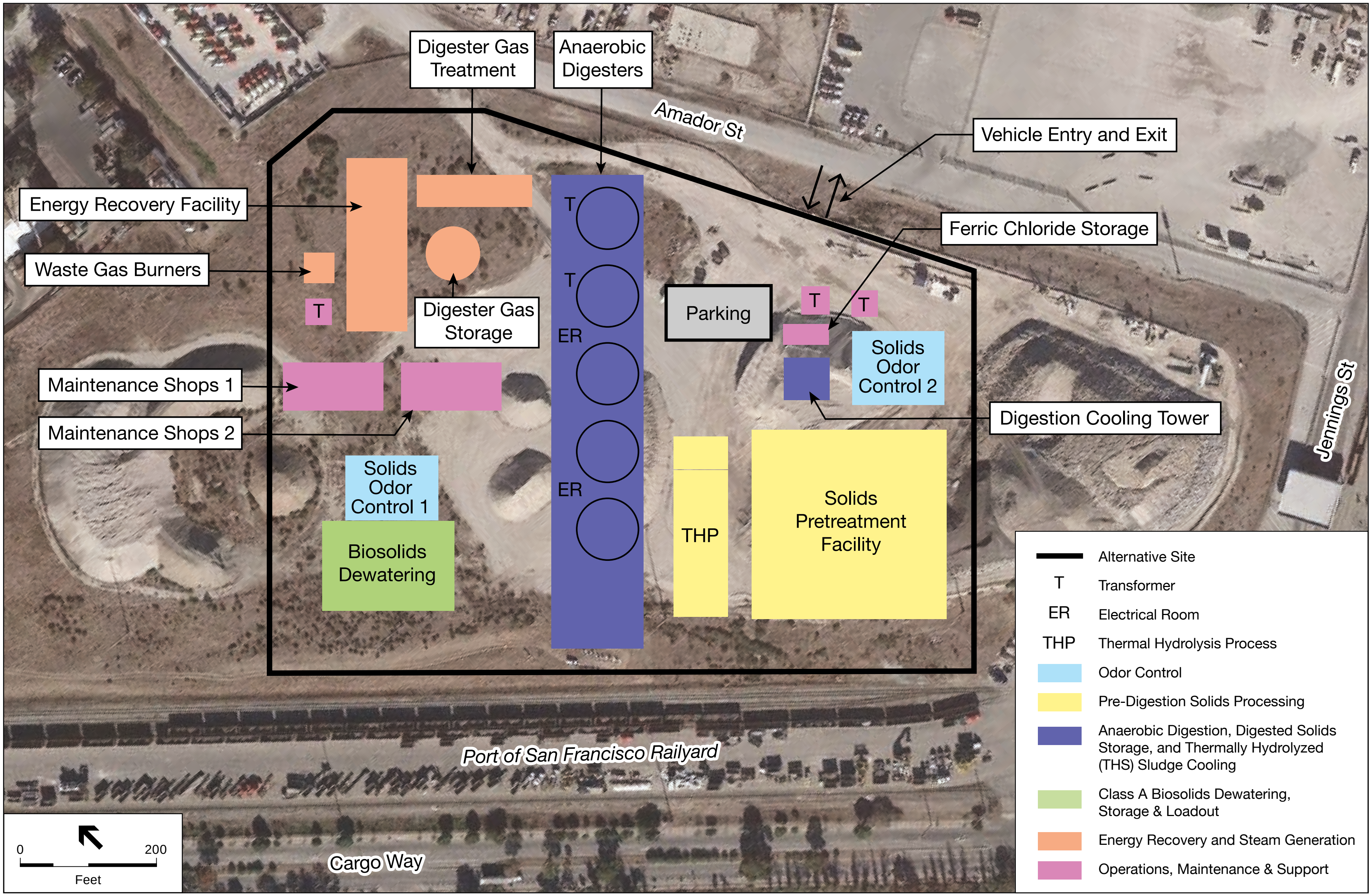
[15] Southeast Digester Task Force for the San Francisco Public Utilities Commission, *Review of the Biosolids Digester Facility Project*, June 2, 2010.
[16] SFPUC, Sludge Pipeline for Remote Biosolids Center Site Alternatives, Draft, November 2009.
[17] Through the Burton Act, the state legislature granted control of the Pier 94 Backlands along with other lands in San Francisco to the Port in 1968. (http://www.slc.ca.gov/Programs/Granted_Lands/G11_San_Francisco_County/G11-01_San_Francisco_Port_District/S1968_Ch1333.pdf)
[18] Port of San Francisco, *Waterfront Land Use Plan*, p. 2., 1997, revised version October 2009. Available online at http://www.sfport.com/index.aspx?page=199.
[19] California Constitution, Article 10 Section 3. (http://www.slc.ca.gov/Programs/Granted_Lands.html)



SOURCE: San Francisco Public Works 2005 GIS data; ESA+Orion, data developed in 2016 for BDFP

SFPUC Biosolids Digester Facilities

Figure 6-3
Location of Pier 94 Backlands Alternative



SOURCE: Brown and Caldwell, CH2M, Black & Veatch; ESA+Orion

Note: Refer to Figure 6-3 for location of pipelines between the SEP and the Pier 94 Backlands Alternative site.

SFPUC Biosolids Digester Facilities

Figure 6-4

Conceptual Site Plan: Pier 94 Backlands Alternative development deemed to increase the public's enjoyment of and access to tidelands (e.g., habitat preservation, recreation). The State Lands Commission is responsible for ensuring compliance with the Public Trust Doctrine for properties like the Pier 94 Backlands. The Pier 94 Backlands Alternative would require approval from the State Lands Commission (and possibly approval from the state legislature) for the trust exchange agreement and approval of long-term use of Pier 94 Backlands from the Port. To secure access to the site, the SFPUC would enter a trust exchange agreement with the State Lands Commission either through negotiation or if authorized by special legislation. In the trust exchange agreement, the SFPUC would need to place into the trust land of similar size and value as the area needed for this alternative.

Site Development Considerations. The Pier 94 Backlands area consists of fill from dredge spoils and construction debris deposited during the 1960s and 1970s; unauthorized deposition of municipal refuse also occurred within part of the site and is now a regulated (closed) landfill (refer to the area shaded green on Figure 4.17-1 in Chapter 4, Section 4.17, Hazards and Hazardous Materials). Although the Pier 94 Backlands itself currently has no utility services, major utilities (e.g., water, wastewater, electrical services) are already available in the vicinity, and the Port plans to construct roads, utilities, and stormwater management facilities on the property as part of the Pier 90-94 Backlands Planning project (refer to Table 4.1-1 in Chapter 4, Section 4.1, Overview).

Pipelines Between Pier 94 Backlands and SEP

Figure 6-3 shows the alignment for the pipeline between the Pier 94 Backlands and SEP North that would be required under this alternative. As shown, the approximately 4,000-foot-long pipeline alignment would be within public rights-of-way, crossing beneath the San Francisco Bay Railroad railyard that abuts the Pier 94 Backlands, then following along Cargo Way, Mendell Street, and Evans Avenue to the SEP.

This pipeline corridor would include 10 to 12 pipelines, each ranging from 6 to 20 inches in diameter, to convey separately the following materials between the Pier 94 Backlands and SEP sites: primary sludge; waste activated sludge; primary scum; No. 2 and No. 3 water; reject liquid from thickening, screening, and dewatering; and a supervisory control and data acquisition fiber optic cable.

Components

Biosolids Treatment, Energy Recovery, and Other Facilities

As shown on Figure 6-4 and Table 6-1, the facilities and processes described for the proposed project—including biosolids treatment, energy recovery, odor control, operations and maintenance, and ancillary facilities—would be constructed and operated at the Pier 94 Backlands site. As with the proposed project, the solids treatment facilities in the Pier 94 Backlands Alternative would use a thermal hydrolysis process and anaerobic digestion to treat solids, producing Class A biosolids and biogas. Energy recovery and odor control facilities would also operate in the same manner, use the same technologies, and generate the same amount of energy as the project. The odor control facilities would be designed to limit odors from solids handling and energy recovery operations to within the site, as with the proposed project. Overall, the areal extent of the site would be about 15 acres (compared to 10 acres for the proposed project), and the total amount of building square footage to be constructed would also be somewhat greater under the Pier 94 Backlands Alternative than under the proposed project, in part because the height of all structures would be limited to 40 feet at this site (refer to Table 2-4 in Chapter 2, *Project Description*, for the heights proposed for project facilities) and because of the additional available space. For example, the five digesters would be 15 feet shorter than under the proposed project, and therefore the diameter of the digesters under this alternative would be greater in order to provide equivalent digestion capacity.

Ancillary Facilities, Support Systems, and Utility Connections

Under this alternative, additional redundant ancillary facilities would be needed because of the remote location of the Pier 94 Backlands from the SEP. Unlike under the proposed project, certain support facilities present at the SEP, such as water, utilities, communication control systems, and chemical storage would not be available. This alternative would thus require a site-specific operations control center and dedicated security, fire protection, backup power facilities with diesel generators, and new connections for commodity utility supplies (e.g., high-voltage electric power and substation, potable water, sewer/stormwater, and natural gas).

As described in Chapter 4, Section 4.16, Hydrology and Water Quality, the Pier 94 Backlands is comprised of unpaved surfaces, and stormwater is treated through a system of landscape swales that collect, treat, and convey stormwater. The stormwater, once treated, is released to the bay through an outfall. This alternative would include the construction of a new separate stormwater system or reconfiguration of the combined sewer system to accommodate stormwater flows from the Pier 94 Backlands. In either case, the drainage system would be constructed in accordance with applicable design requirements to accommodate anticipated stormwater flows.

Other Project Features

Under this alternative, flood-proofing for the Pier 94 Backlands would be in accordance with the SFPUC's Climate Change Guidance for SSIP Projects and consistent with the anticipated future flood levels at this location (refer to Chapter 4, Section 4.16, Figures 4.16-3, 4.16-4, and 4.16-5). As with the project, architecture and landscaping would be designed consistent with the San Francisco Planning Code, the Stormwater Management Ordinance, the San Francisco Arts Commission Civic Design Review process and Public Art Program, and the *San Francisco Better Streets Plan*. The decommissioning of the existing digesters would be as described for the project (see Chapter 2, Section 2.4.2.4) but would occur at least two to three years later than with the project.

Operations and Maintenance

Performance testing, full facility commissioning, plant capacity, and operating hours for the Pier 94 Backlands Alternative would be the same as described for the proposed project. The SFPUC would conduct routine maintenance of new facilities and equipment, although there would be more facilities and equipment to maintain than under the proposed project (due to the need for site-specific dedicated operations and maintenance facilities, as well as the pipelines between the SEP and Pier 94 Backlands). As indicated in Table 6-1, five additional staff would be needed at the Pier 94 Backlands to operate and maintain the facilities. Trucks hauling biosolids, chemical deliveries, yellow grease loadout, and grit/screening debris would use Amador, Illinois, Cesar Chavez, and Pennsylvania Streets for access to the Pier 94 Backlands site when traveling to and from U.S. Highway 101 and Interstate 280.

Similar to the proposed project, energy produced at the energy recovery facility would be used to support solids processing, but unlike the proposed project, the energy recovery facilities located at the Pier 94 Backlands site would not be available as backup power to the main plant or to support other SEP facilities.

Construction

Construction Schedule, Work Force, Hours, and Coordination

Similar to the proposed project, construction of the Pier 94 Backlands Alternative would take approximately five years. The overall construction schedules are estimated to be similar because (1) total facilities construction activities would be essentially the same and require the same amount of time (refer to Chapter 2, Table 2-10); (2) although no major demolition would be necessary, more extensive site preparation activities would be needed at the Pier 94 Backlands site, requiring about the same amount of time; and (3) construction of the additional pipelines between the SEP and Pier 94 Backlands site could occur concurrently. Pipeline construction could involve more than one location at a given time if the contractor were to mobilize multiple crews to work at different locations along the alignment. If so, the size of the construction work force for the Pier 94 Backlands Alternative would be greater than that estimated for the proposed project. For purposes of this alternatives analysis, it is assumed that the construction work force could be 10 percent greater than that estimated for the proposed project at any given time. Construction hours would be the same as for the project (generally 7:00 a.m. to 3:30 p.m. Monday through Friday, with some activities extending to 8:00 p.m. as needed. Construction could also occur on Saturdays and Sundays when needed. As with the project, prior to the start of construction, the SFPUC would hire a Southeast Area Program Construction Manager who would (among other things) oversee construction staging and traffic control planning. The SFPUC would develop a Traffic Control Plan for this alternative similar in content to that described in Chapter 2, Section 2.6, Project Construction, but also addressing traffic control needed for pipeline construction, which would entail in-street construction.

Under this alternative, construction would start at least several years later than the project due to the unknown timeline required to garner site use permissions. As described above, the site use process for the Pier 94 Backlands Alternative would require approval from the San Francisco Port Commission and approval from the State Lands Commission for public trust consistency (and possibly approval from the California legislature).

Construction Staging and Haul Routes, Lane Closures, and Temporary Relocation of Muni Routes

Staging for construction of biosolids treatment facilities under the Pier 94 Backlands Alternative would require up to 12 acres (similar to the proposed project). Staging would occur within the

Pier 94 Backlands and Piers 94/96 staging areas, similar to the proposed project. Staging for pipeline construction would occur in these areas as well as within the pipeline construction corridor.

Construction haul routes would be as indicated in Table 6-1. (Existing operational haul trips from the SEP would not be affected during construction of this alternative.) Pipeline construction would require temporary closure of travel lanes, although with the possible exception of Mendell Street, full road closures are not anticipated; San Francisco Municipal Railway (Muni) Routes 19 and 44 along Evans Avenue could require rerouting during pipeline construction in that street.[20]

Construction Methods

General construction methods would be similar to those for the proposed project (described in Chapter 2, Section 2.6) with the following exceptions: no building demolition or tree removal would be required, and the pipelines between the Pier 94 Backlands and the SEP would be installed using traditional cut and cover (trenching) and bore and jack techniques. Bore and jack construction (a form of tunneling) would be used to construct the pipelines beneath the San Francisco Bay Railroad railyard and westbound lanes of Cargo Way, and under Third Street at Evans Avenue. For purposes of this alternatives analysis, it is assumed that the depth of excavation for pipeline construction would be 10 to 30 feet, though deeper construction would occur at bore and jack locations. Pipeline construction would be constrained due to the complexity of installing multiple pipelines within streets that already contain numerous utilities (necessitating relocation of some utilities), but would be expected to be completed within the overall five-year construction schedule.

Permits and Approvals

As listed in Table 6-1, many of the permits and approvals needed for the Pier 94 Backlands Alternative would be the same as those required for the proposed project. Additional approvals needed for this alternative include approval by the State Lands Commission or state legislature for the trust exchange agreement, approval of long-term use of the Pier 94 Backlands from the Port, and approvals from the Regional Water Quality Control Board (RWQCB) related to construction within a closed landfill. In addition, the Port's Waterfront Land Use Plan would need to be amended to allow the use to occur.

6.3.2.2 Ability to Meet Project Objectives

The Pier 94 Backlands Alternative would meet most of the project's basic objectives, as shown in Table 6-2. However, this alternative would <u>not</u> allow for timely construction of the BDFP because of the years of delay anticipated for permission to use the Pier 94 Backlands site. This alternative would <u>not</u> maximize the efficiency of the current treatment process operations and maintenance, staffing resources, and use of existing SFPUC infrastructure because it could not use existing support facilities and systems at the SEP and would require construction of new essentially

[20] SFPUC, Sludge Pipeline for Remote Biosolids Center Site Alternatives, Draft, November 2009.

duplicative support facilities and systems at the Pier 94 Backlands site. Similarly, because this alternative would not result in a plant-wide operations center and standby power, it would only partially meet the objective of building critical processes with redundant infrastructure to provide reliability and operational flexibility. Lastly, the ability of this alternative to maintain rate payer affordability is unknown because of the financial uncertainties associated with site acquisition.

6.3.2.3 Environmental Impacts

Land Use

The Pier 94 Backlands is currently undeveloped and used for storage of soil and aggregate. No community is established on the Pier 94 Backlands, and the public does not use the site. Neither the Pier 94 Backlands Alternative nor any of the cumulative projects in the vicinity of the Pier 94 Backlands would include physical barriers or obstacles to circulation that would restrict existing patterns of movement. Pipelines connecting the Pier 94 Backlands site to the SEP would be located underground. Consequently, the Pier 94 Backlands Alternative would not physically divide an established community, and as with the proposed project, this impact would be less than significant.

As described in Chapter 3, *Plans and Policies,* development at the Pier 94 Backlands site is subject to policies and other provisions of the City's *San Francisco General Plan* and *Bayview Hunters Point Area Plan* and the Port's *Waterfront Land Use Plan*.[21] Unlike the project, the Pier 94 Backlands Alternative would be consistent with *San Francisco General Plan* policies related to the preservation of historical resources and Policy 7 of the Accountable Planning Initiative, due to the preservation of Central Shops Buildings A and B. However, the Pier 94 Backlands Alternative as a permanent, non-maritime use would not be consistent with Port's *Waterfront Land Use Plan*. As part of their approval processes, the San Francisco Planning Commission, the Port, and other relevant regulatory agencies would determine whether, on balance, the Pier 94 Backlands Alternative would be consistent with the plans they administer, and would identify any exceptions or revisions that might be required (e.g., revising policies to reflect removal of the property from the public trust and use of the site for wastewater treatment). Therefore, at this time, the Pier 94 Backlands Alternative would not be inconsistent with aspects of the *San Francisco General Plan* and *Bayview Hunters Point Area Plan* relevant to avoiding or mitigating an environmental effect, but the use would not be consistent with the Port's *Waterfront Land Use Plan.* Assuming that an amendment to the Port's *Waterfront Land Use Plan* would be incorporated as part of this alternative, this impact would be less than significant.

[21] For example, the *Bayview Hunters Point Area Plan* designates the Pier 94 Backlands area as Maritime Industrial, and the *Waterfront Land Use Plan* designates part of the Pier 94 Backlands area as a "Waterfront Mixed Use Opportunity Area" and identifies portions of the area as either "Existing Maritime Area" or "Maritime Expansion Area." In addition, the *San Francisco Bay Plan*, *San Francisco Bay Area Seaport Plan*, and *Waterfront Special Area Plan* designate the Pier 94 Backlands area for "port priority" use.

Aesthetics

Under the Pier 94 Backlands Alternative, new permanent structures would be constructed at the Pier 94 Backlands, but the maximum height of the structures would be limited to 40 feet. Thus, the new facilities would be similar in character and scale to nearby industrial facilities. A portion of the digesters and other structures would be visible from certain public vistas, including parts of Heron's Head Park, the India Basin Shoreline Park to the southeast, and Hilltop Park and Adam Rodgers Park to the south. However, because the facilities would all be located west of Amador Street, the facilities would not block views of the Bay from these parks nor otherwise obstruct scenic vistas. While facilities at the Pier 94 Backlands would be highly visible from the section of the Bay Trail on Cargo Way between Heron's Head Park and Illinois Street, the area is already substantially developed with industrial land uses, and existing views of the Bay from this part of the San Francisco Bay Trail are substantially blocked by sand and aggregate piles, equipment, and structures. Therefore, while the Pier 94 Backlands Alternative, alone and in combination with cumulative projects, would intensify industrial uses in this area, the new facilities would not substantially degrade the visual character of the site or surroundings, adversely affect a scenic vista, or damage scenic resources. Thus, as with the proposed project, these visual impacts would be less than significant.

Construction of this alternative would create a new source of nighttime light or glare during nighttime construction activities, but this light and glare would not substantially affect other people or properties because the closest residences to the Pier 94 Backlands site are more than 1,800 feet away. As a result, this aesthetics impact would be less than significant. As with the project, compliance with SFPUC standard construction measures would ensure that construction site and staging areas are maintained in a clean and orderly condition and nighttime lighting is directed away from residential areas and has shields to prevent light spillover effects. As with the proposed project, compliance with applicable regulations and policies (California Green Building Code Section 5.106.8 and *San Francisco Better Streets Plan* policy) would ensure that light and glare from operation of the facilities would be less than significant.

Population and Housing, Growth Inducement

Similar to the proposed project, the Pier 94 Backlands Alternative would not displace housing would not increase treatment capacity at the SEP, nor would it extend roads or infrastructure into an undeveloped area. While construction-phase employment projections could be incrementally (assumed to be 10 percent) greater under this alternative than under the proposed project, construction workers would largely be drawn from the local and regional work force and would commute (rather than relocate) to the area. Although this alternative would require an additional five employees over existing SEP (and future with-project) staffing levels, this increase would not represent substantial population growth. Thus, the Pier 94 Backlands Alternative would not induce population growth, displace housing units, create substantial demand for additional housing, or displace a substantial number of people, and population and housing and growth inducement impacts would be less than significant.

Cultural Resources

Historical Resources

There are no known historical resources at the Pier 94 Backlands. Under this alternative, Central Shops Buildings A and B would be retained in place rather than demolished. Consequently, this significant and unavoidable impact on a historical resource associated with the project would not occur.

There are no recorded historical resources within or immediately adjacent to the proposed pipeline route (Evans Street, Mendell Street, and Cargo Way). Buildings along the pipeline route are primarily modern, light industrial, industrial, or office buildings, most of which were constructed in the late 1970s to the late 1980s;[22] as such, they would not meet the minimum age threshold for eligibility for listing in the California Register. Approximately six industrial, steel-frame warehouses on the north side of Evans Street between Quint and Phelps Streets were built from 1961 to 1969 and would meet the minimum age threshold.[23] Upon further review, these buildings could be eligible for listing in the California Register if they meet criteria such as associations with historic events or important persons, or are the embodiment of a certain style of architecture. While construction of the pipelines would have no direct effects (e.g., demolition or substantial alteration) on potentially age-eligible buildings, it could have indirect effects from vibration associated with activities such as pile driving and use of large vibratory compactors. However, these buildings are mostly corrugated steel and concrete construction, which have reduced sensitivity to vibration; in addition, the one masonry building has been structurally upgraded in compliance with local ordinance requirements.[24] Should any damage occur to these buildings, the SFPUC would be required to repair the damage. In addition, if upon later investigation these buildings are determined to be historical resources, mitigation measures could be applied to reduce the potentially significant impact to less-than-significant levels.

While the Pier 94 Backlands Alternative would avoid impacts on historical resources (by retaining Central Shops Buildings A and B in place), the cumulative impacts of this alternative on historical resources would be substantially the same as those identified for the proposed project. Similar to the proposed project, this alternative would still replace the function of the existing digesters and associated buildings at the SEP, and would allow for subsequent potential demolition of many of the contributors to the *Southeast Treatment Plant Streamline Moderne Industrial Historic District* during the envisioned Southside Renovation Project. Mitigation Measure M-CR-1 (Documentation of Historical Resources and Interpretive Display) would reduce the severity of the cumulative impact but would not reduce the impacts on the historic district to a less-than-significant level. As such, the cumulative impact on historical resources due to the indirect impacts of Pier 94 Backlands Alternative in combination with the direct impact of the Demolition of the Existing SEP Digesters and Southside Renovation Project, with respect to future demolition of the existing digesters and control buildings, would be a significant and

22 Assessor's records accessed June 10, 2016 via San Francisco Property Information Map, http://propertymap.sfplanning.org.
23 Ibid.
24 San Francisco Property Information Map, Building Permits for 1698 Evans Avenue. Available online, accessed July 29, 2016.

unavoidable cumulative impact, even with mitigation, and the alternative's contribution to the impact would be cumulatively considerable (i.e., significant).

Archeological Resources and Human Remains

Like the proposed project, the Pier 94 Backlands Alternative could result in a substantial adverse change in the significance of an archeological resource. Because the Pier 94 Backlands and pipeline routes are on artificial fill from land reclaimed during the 1960s, there is the potential that historic structures, such as shipwrecks or wharf remains, present within San Francisco Bay when land reclamation began, could still be extant. Remains of these historic structures could be preserved beneath the artificial fill on or beneath the original San Francisco Bay floor and could be directly affected by construction excavations that penetrate the fill. This site has low potential for the presence of middle or later period prehistoric archeological sites as the subterranean topography does not display pre-Bay conditions generally associated with elevated potential for submerged prehistoric sites, and the area has been under bay waters for several thousand years at least. However, the potential to encounter older, submerged prehistoric sites through drilling of pilings beneath the bay floor has not been assessed for this site. Implementation of Mitigation Measure M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery) and Mitigation Measure M-CR-2b (Accidental Discovery of Archeological Resources) would reduce this potentially significant impact to a less-than-significant level. With respect to cumulative impacts on archeological resources, the Pier 94 Backlands Alternative would avoid contributing to potential cumulative impacts on CA-SFR-171, but the potential remains that this alternative could contribute to cumulative impacts on both recorded and unrecorded archeological resources in the Pier 94 Backlands vicinity as well as along the pipeline route between the Pier 94 Backlands site and the SEP. However, as with the proposed project, implementation of Mitigation Measure M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery) and Mitigation Measure M-CR-2b (Accidental Discovery of Archeological Resources) would ensure that any contribution to potentially significant cumulative impacts on archeological resources would not be cumulatively considerable.

Like the proposed project, this alternative has the potential to uncover human remains that may have been buried outside of formal cemeteries. In the event that human remains are uncovered during ground-disturbing activities, Mitigation Measure M-CR-2b (Accidental Discovery of Archeological Resources) would reduce this potentially significant impact to a less-than-significant level. Therefore, with mitigation, the impact on archeological resources and human remains would be less than significant.

Transportation and Circulation

Under the Pier 94 Backlands Alternative, impacts on transportation and circulation would generally be similar to those of the proposed project, although the effects of construction and operations would predominantly occur to the east of the SEP. Table 6-1 indicates the construction- and operations-phase vehicle routes associated with this alternative, as well as the streets associated with the pipeline alignment.

Construction-Phase Transportation and Circulation Impacts

Construction-related travel demand would be incrementally greater (assumed to be 10 percent) than with the proposed project because of the increased number of vehicle trips associated with pipeline construction, although truck and worker access routes would be primarily via Cesar Chavez Street (instead of Oakdale and Jerrold Avenues). Pipeline construction would require temporary closure of travel lanes on Cargo Way and Evans Avenue and could require temporary full closure of segments of Mendell Street. Pipeline construction within Evans Avenue between Quint and Mendell Streets may require temporary rerouting of the Muni 19 Polk and 44 O'Shaughnessy routes for three to four months or more (depending on the rate of pipeline construction). Pipeline construction at Third Street would occur via bore and jack construction, and thus would not affect T Third light rail operation. Unlike the proposed project, this alternative would not require the temporary closure of Jerrold Avenue and rerouting of the Muni 22 Monterey route. Pipeline construction under this alternative could temporarily disrupt bicycle and pedestrian facilities along the route of the pipelines between the SEP and Pier 94 Backlands (such as the Class II and III lanes along Evans Avenue and the Class IV separated path along Cargo Way). As with the proposed project, the SFPUC would implement a Traffic Control Plan under this alternative that would include measures to reduce traffic congestion and temporarily relocate bus stops, and other measures to reduce potential traffic, bicycle, pedestrian, transit, and emergency vehicle access disruptions and safety hazards. Thus, similar to impacts of the project, construction-related transportation impacts of the Pier 94 Backlands Alternative would be less than significant.

Given the change in location and construction start date, construction of new biosolids facilities at the Pier 94 Backlands would minimally overlap with cumulative projects identified for the proposed project, but would likely overlap with other projects in the vicinity of Pier 94 for which schedules are currently undetermined or that are still in the planning stages.[25] As with the proposed project, a Southeast Area Program Construction Manager would be hired by the SFPUC to manage implementation of the Traffic Control Plan and lead coordination efforts between other projects in the vicinity and SEP operations throughout construction. The Southeast Area Program Construction Manager would also be responsible for coordinating with the project teams to update the San Francisco Municipal Transportation Agency (SFMTA) as needed to address local traffic, transit, bicycle, and pedestrian issues. Therefore, as with the proposed project, implementation of the Pier 94 Backlands Alternative, in combination with construction of other cumulative projects, would result in less-than-significant cumulative construction-related transportation impacts.

Operations-Phase Transportation and Circulation Impacts

Under this alternative, operation and maintenance of new facilities at Pier 94 Backlands would generally be similar to the proposed project, though with some relocation of truck trips from the SEP to the Pier 94 Backlands and a slight increase in staffing (up to five additional staff) with a commensurate increase in travel demand. The additional trips would not substantially affect

[25] These cumulative projects could include the Asphalt and Concrete Recycling and Production Plant at Pier 94, Pier 96 Bulk Export Terminal, and the Blue Greenway Project and Heron's Head Park Improvements.

transportation and circulation in the vicinity of Pier 94 and, as with the proposed project, operations-phase impacts on transportation and circulation would be less than significant.

Noise and Vibration

Under this alternative, the biosolids facilities would be located over 2,200 feet north of the closest residential receptors, and about 1,200 feet northeast of City College of San Francisco's Evans Campus (an educational facility). Construction and operational noise impacts on residential receptors would be reduced under this alternative compared to the proposed project, because both residential receptors and educational facilities would be located much farther from construction and operational noise.

Since the same construction equipment would be used under this alternative, Impact NO-1, regarding consistency with ordinance noise limits, would be the same (i.e., significant for concrete saws) under Pier 94 Backlands Alternative as it would be under the proposed project.

Construction noise impacts from use of the Southeast Greenhouses staging area would be avoided under this alternative since this staging area would no longer be needed. However, this alternative would have additional construction noise impacts associated with pipeline construction that would not occur under the proposed project. The proposed pipeline alignment would extend along the southern and eastern boundaries of the City College campus. Due to the proximity of City College to the pipeline alignment (minimum of 150 feet from the edge of Evans Avenue and 25 feet from Mendell Street), construction-related noise levels would be significantly higher near City College compared to the proposed project and would require mitigation measures such as construction equipment source and administrative controls to reduce the potentially significant impacts to less than significant. However, pipeline construction would move along the alignment and construction-related noise impacts associated with pipeline construction would be much shorter in duration than facility construction at the project site or at the Pier 94 Backlands. When all of these factors are considered, construction-related noise impacts of the Pier 94 Backlands Alternative would be potentially significant but less severe compared to the proposed project's impacts. Similarly, the less-than-significant operational noise impacts on nearby sensitive receptors that would occur under the proposed project would be avoided altogether under this alternative.

With the additional pipeline construction required under this alternative, the likelihood of vibration impacts would be greater than under the proposed project. Construction along the pipeline alignment would occur near buildings (as close as 15 feet from edges of streets), which could be subject to temporary increases in vibration. In addition, if sheet pile driving is required at bore and jack pits or along the pipeline alignment, vibration impacts on adjacent structures would be greater than would occur under the proposed project because of the structures' proximity to such activities. This alternative would likely require vibration controls to reduce these potentially significant effects to a less-than-significant level.

This alternative would avoid the significant, but mitigable, cumulative construction-related noise impact that would result from the proximity of the project to other SFPUC projects proposed at the SEP and their proximity to nearby sensitive receptors. While construction of this alternative could overlap with construction of other cumulative projects in the Pier 94 Backlands vicinity, any cumulative noise impacts are expected to be less than significant due to the absence of sensitive receptors in the immediate vicinity of the Pier 94 Backlands. Any cumulative operational noise or vibration increases would also be expected to be less than significant for the same reason (absence of sensitive receptors). Therefore, cumulative construction-related impacts would be less severe than those of the project, and as with the proposed project, cumulative operational noise and vibration impacts are anticipated to be less than significant.

Air Quality

While this alternative would avoid air pollutant emissions associated with the proposed project's demolition activities, there would be additional emissions resulting from construction of up to 12 pipelines between the SEP and the Pier 94 Backlands site and the additional redundant ancillary facilities required under this alternative. When the component of project emissions related to demolition activities is compared to construction-related emissions typically associated with pipeline projects, it would be expected that emissions from pipeline construction would be greater than emissions from demolition activities due to the excavation, grading, and off-hauling that would be required for pipeline construction. Thus, with all other aspects of construction and operations being essentially equivalent, the Pier 94 Backlands Alternative would likely result in a net increase in construction-related criteria air pollutant and toxic air contaminant (TAC) emissions, compared to the proposed project. Construction-related criteria air pollutant emissions would be greater under this alternative and the significant and unavoidable construction-related impacts associated with NOx emissions that would occur during two years of construction under the proposed project would also be significant and unavoidable during at least two years of construction under this alternative. Despite the overall increase in construction-related TAC emissions, construction-related health risks and hazards would be less than those of the proposed project because there are few, if any, sensitive receptors located within 1,000 feet downwind of the Pier 94 Backlands site. Since the closest sensitive receptors are not located downwind of the site, construction-related health risks and hazards are expected to be lower at these locations. Likewise, the potential for nuisance odors to adversely affect downwind sensitive receptors would also be less under this alternative. However, it is noted that construction-related and operational TAC emissions and nuisance odor impacts would be less than significant under both this alternative and the proposed project.

Like the project site, the Pier 94 Backlands is located within an APEZ. As with the proposed project, construction and operation of the BDFP facilities at this site is not expected to expand the APEZ.

Although greater construction-related emissions would occur under this alternative, potentially significant impacts associated with conflicts with the 2010 Clean Air Plan would be the same as those of the proposed project and would be less than significant with mitigation.

This alternative's contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than that of the proposed project due to the added pipeline construction, and as with the proposed project, this cumulative impact would be significant and unavoidable, even with implementation of mitigation measures like Mitigation Measures M-AQ-1a and M-AQ-1b. Although there would be a net increase in construction-related contaminant emissions and TACs, cumulative health risks and hazards would be less severe than those of the proposed project because the closest sensitive receptors are farther (1,800 feet) compared to the project and because of the absence of downwind receptors at the Pier 94 Backlands site.

Greenhouse Gas Emissions

This alternative would have the same energy capture potential (from digester gas produced) and the same increase in biosolids reuse opportunities as the project, and would be subject to the same local regulations adopted to reduce GHG emissions. Energy produced by digester gas facilities under the Pier 94 Backlands Alternative would be similar to the energy produced under the project and would result in a similar associated increase in biogenic GHG emissions, but unlike the proposed project, the energy recovery facilities located at the Pier 94 Backlands site would not be available as backup power to the main plant or to support other SEP facilities. Other SEP facilities would remain reliant upon Hetch Hetchy power, similar to existing conditions, and therefore, unlike the proposed project, GHG emissions reductions would not be realized because this renewable energy source would not be freed up for use by others. This alternative would nevertheless have a less-than-significant effect because its GHG emissions would not conflict with state, regional, or local GHG reduction plans and regulations, and would not contribute considerably to cumulative GHG emissions.

Wind and Shadow

Because the pipelines between the SEP and the Pier 94 Backlands would be underground, they would not affect wind or shadow and are not discussed further in this section.

Wind

Similar to the proposed project site, the Pier 94 Backlands does not contain any areas subject to wind comfort or wind hazard criteria established in the San Francisco Planning Code. The nearest public areas to the portion of the Pier 94 Backlands that would be developed under this alternative (shown on Figure 6-4) are Amador Street, which has no sidewalks, and Cargo Way, which includes a segment of the Bay Trail. Cargo Way is 200 feet from the Pier 94 Backlands and separated from it by the San Francisco Bay Railroad railyard. As occurs at the proposed project site, winds in the area are typically from the west/southwest and wind speeds are light. Changes in wind patterns resulting from this alternative would generally occur to the east (downwind) of the Pier 94 Backlands along Amador Street. Given existing wind conditions and the absence of downwind public areas, implementation of the Pier 94 Backlands Alternative would not alter wind in a manner that would substantially affect public areas and, as with the proposed project, this impact would be considered less than significant. Given the location and nature of cumulative projects in the vicinity of the Pier 94 Backlands, no significant cumulative impacts related to wind would be anticipated.

Shadow

Heron’s Head Park is the nearest public open space to the Pier 94 Backlands. The parking lot at Heron’s Head Park is about 500 feet southwest of the portion of the Pier 94 Backlands that would be developed under this alternative. None of the facilities that would be constructed at the Pier 94 Backlands would exceed 40 feet in height; thus, Section 295 of the San Francisco Planning Code would not apply. The Pier 94 Backlands Alternative could cast new shadow on bicycle routes, the Bay Trail, and sidewalks along Cargo Way during certain times of the year, although the facilities would be located over 200 feet away. New shadow, if any, would be transitory in nature and would not substantially affect the function of these pathways (which are generally not used as places for extended periods of stationary activity). The open space recreation facilities are too distant to be affected by shadows created by facilities that would be constructed at the Pier 94 Backlands under this alternative. Consequently, implementation of the Pier 94 Backlands Alternative would not create shadow in a manner that could substantially affect outdoor recreation facilities or other public areas and, as with the project, this impact would be considered less than significant. Given the location and nature of cumulative projects in the vicinity of the Pier 94 Backlands, no significant impacts related to shadow would be anticipated.

Recreation

As discussed above, recreational resources in the vicinity of Pier 94 Backlands include the Bay Trail along Cargo Way, Heron's Head Park, India Basin Shoreline Park, Hilltop Park, and Adam Rodgers Park. Similar to the proposed project, this alternative would construct neither housing nor recreational resources. The five additional workers needed to operate the solids processing facilities at the Pier 94 Backlands would create a negligible increase in existing trail and park use in the area. Construction of the pipelines from the SEP to the Pier 94 Backlands could temporarily disturb users of the Bay Trail during construction in Cargo Way; however, this disturbance would be temporary, and use of the Bay Trail is transitory. The Pier 94 Backlands Alternative would not otherwise alter existing recreational resources. Under cumulative conditions, this alternative in combination with the Blue Greenways Project, Asphalt and Concrete Recycling and Production Plant, and Pier 96 Bulk Export Terminal, could result in an incremental increase in use of recreational resources in the vicinity. However, the incremental increase in use of these resources would not result in physical degradation to the extent that construction or expansion of recreational facilities would be required. These cumulative projects would have less-than-significant incremental impacts related to recreational resources. For these reasons, similar to the proposed project, this alternative would have less-than-significant impacts related to recreational resources.

Utilities and Service Systems

Compared to the proposed project, the Pier 94 Backlands Alternative would generate more soil requiring disposal, primarily resulting from construction of the new digesters (which have a much larger diameter) and the pipelines between the Pier 94 Backlands and the SEP. Other than this construction-related increase, this alternative would generate approximately the same amount of wastewater and solid waste as the proposed project and would require the same amount of potable water. Wastewater would be conveyed to the SEP via facilities designed to accommodate the anticipated flows. Solid waste disposal would be subject to the same regulatory requirements as the proposed project. There is currently a system of landscape swales that collect, treat, and convey stormwater through an outfall to the Bay, but this alternative would include modifications to the combined sewer system or construction of a new separate stormwater system for the conveyance of stormwater runoff. In either case, the drainage system would be constructed in accordance with applicable design requirements to accommodate anticipated stormwater flows. As with the proposed project, compliance with applicable regulatory requirements would ensure that the Pier 94 Backlands Alternative would not result in any impacts with respect to utilities or services systems. All cumulative development in San Francisco would be subject to the same regulatory framework as this alternative, and compliance with these existing regulations would serve to reduce any cumulative impacts. Therefore, all impacts related to utilities and service systems would be less than significant, as identified for the proposed project, and no mitigation would be required.

Public Services

The number of construction workers needed for the Pier 94 Backlands Alternative would be about 10 percent higher than the number needed for the proposed project, and similarly the temporary increase in demand for public services during construction would be limited to an insubstantial increment above current conditions. As with the proposed project, the SFPUC would be required to prepare a Traffic Control Plan for construction (including pipelines) (see Chapter 2, Section 2.6.1.3, Construction Coordination). The impact of construction on demand for public services and governmental facilities would thus be less than significant. The five additional workers required to staff operation of the solids processing facilities under this alternative would not substantially increase the population of permanent residents requiring public services in the area. As with the proposed project, facilities under this alternative would be constructed in compliance with all applicable fire codes and public safety standards and would be inspected by the San Francisco Fire Department. The Pier 94 Backlands site is within the same police and fire jurisdictions as the proposed project site. Operation of this alternative would have a less-than-significant effect on demand for public services and governmental facilities. For these reasons, all impacts related to public services would be less than significant, as identified for the proposed project, and no mitigation would be required.

Biological Resources

Whereas the proposed project would remove buildings/structures that could serve as roost for bats, implementation of the Pier 94 Backlands Alternative would not require removal of any structures. Thus, the potential impact on bat roosts would not occur under this alternative. As with the proposed project, implementation of SFPUC standard construction measures as well as compliance with the Construction General Stormwater Permit and the City's Construction Site Runoff Control requirements (Article 4.2, San Francisco Public Works Code, Section 146) would reduce potentially significant impacts on nesting birds to a less-than-significant level. This alternative would include removal of non-native grasslands and coyote brush to accommodate construction activities and facility construction. These activities would result in short-term ground disturbance and increased noise, and long-term foraging habitat removal, which would be potentially significant impacts on migratory birds. As with the proposed project, implementation of SFPUC standard construction measures during project construction would reduce these effects to a less-than-significant level. Implementation of this alternative would not require the removal of any protected trees; however, if tree removal becomes necessary, it is assumed that any removal of protected trees would occur in compliance with requirements in the San Francisco Urban Forestry Ordinance. Bore and jack construction activities could result in short-term indirect impacts on industrial drainages to the north of Cargo Way, although these potential impacts are considered less than significant with the implementation of the project's Stormwater Pollution Prevention Plan (SWPPP). Like the proposed project, the Pier 94 Backlands Alternative would not significantly affect sensitive wildlife or vegetation, or wetlands, after the implementation of the aforementioned best management practices and the SFPUC standard construction measures.

Geology, Soils, and Paleontological Resources

The amount of earthwork under this alternative would be incrementally greater than under the proposed project, primarily due to construction of the pipelines between the Pier 94 Backlands and the SEP. However, impacts related to soil erosion would remain less than significant with implementation of the requirements of Article 4.1 of the San Francisco Public Works Code and the SWRCB General Construction Stormwater NPDES Permit. As with the proposed project, excavations conducted during construction would be shored in accordance with applicable regulations. Monitoring would be conducted during dewatering and pile driving, and corrective actions would be implemented if necessary to ensure that settlement would remain within acceptable levels. Similarly, facilities would be constructed in accordance with the San Francisco Building Code, the SFPUC's General Seismic Safety Requirements, and applicable engineering design standards, which would ensure that the structures could withstand seismic hazards including ground shaking and ground failures (including vibration-induced liquefaction during project construction).

While some of the facilities would be constructed within the limits of the regulated landfill in the Pier 94 Backlands and could be subject to substantial amounts of settlement, this alternative would implement the recommendations of the required site-specific geotechnical report, which would need to be prepared, to reduce the amount of settlement and/or the potential for damage due to settlement. The artificial fill and young bay mud that underlie the Pier 94 Backlands have a low potential for paleontological resources. Therefore, all impacts related to geology, soils, seismicity, and paleontology would be less than significant and no mitigation would be required.

Hydrology and Water Quality

Under the Pier 94 Backlands Alternative, the amount of earth-moving activities and construction-related groundwater dewatering would be greater than under the proposed project, due to the larger area required, the depth to groundwater, and the construction of pipelines between the Pier 94 Backlands and the SEP. However, impacts related to degradation of water quality would remain less than significant with implementation of City requirements (i.e., Articles 4.1 and 4.2 of the San Francisco Public Works Code and the SWRCB General Construction Stormwater NPDES Permit). This alternative would include the construction of a new separate stormwater system or reconfiguration of the combined sewer system to accommodate stormwater flows from the Pier

94 Backlands. Under either option, compliance with City requirements (Article 4.1 of the San Francisco Public Works Code and the City's Stormwater Design Guidelines) would preclude adverse water quality effects from discharge of stormwater. Because the proposed biosolids treatment processes would be the same under the proposed project and the Pier 94 Backlands Alternative, the changes in SEP effluent composition would also be the same (and would not adversely affect receiving water quality). While the project site would be partially within the 100-year flood zone in 2100 with 36 inches of sea level rise, the Pier 94 Backlands is not within an existing or future flood zone or within a potential tsunami inundation zone. For these reasons, as with the proposed project, all impacts related to hydrology and water quality would be less than significant under the Pier 94 Backlands Alternative.

Hazards and Hazardous Materials

There are no buildings at the Pier 94 Backlands, and there are no schools located within one-quarter mile of the Pier 94 Backlands. Construction of the new facilities at the Pier 94 Backlands would introduce a new use of hazardous materials at this site. As with the proposed project, compliance with City requirements (e.g., Article 21 of the San Francisco Public Health Code) regarding the use of hazardous materials would ensure that adverse effects would not occur. The geologic materials at the Pier 94 Backlands contain asbestos.[26] As with the proposed project, construction within these materials would be subject to the requirements of the California Air Resources Board Asbestos Air Toxics Control Measure.

As indicated above, the northern portion of the Pier 94 Backlands site would be located over a portion of a Class III regulated landfill regulated under Order No. R2-2003-0055 issued by the RWQCB.[27] Historic groundwater monitoring indicates that the landfill wastes have not adversely affected groundwater or surface water quality except in the area of a previous aboveground fuel storage tank where elevated total petroleum hydrocarbon concentrations have been identified in the groundwater.[28] However, excavation could encounter wastes within the landfill and potentially affect the integrity of the landfill cover. Although a 1988 Solid Waste Assessment Test investigation of the landfill did not detect methane, volatile organic compounds (VOCs), or hydrocarbons in the soil gas,[29] methane is a common byproduct of decomposing wastes. Therefore, following construction, building occupants could potentially be exposed to harmful landfill gases such as methane and VOCs. However, the RWQCB must approve all changes to the landfill and would require technical reports under Order No. R2-2003-0055 to address how the design of this alternative would maintain the integrity of the landfill and prevent water quality impacts. In addition, as with the proposed project, the assessment and management of site risks would be ensured through compliance with the Maher Ordinance, Article 22A of the San Francisco Health Code, regardless of the likelihood that higher volumes of contaminated soil would be encountered

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[26] TR/RYCG, *Site Investigation Report Pier 94 Backland Improvement and Amador Street Sanitary Pump Station San Francisco, California*, June 15, 2012.

[27] RWQCB, *Pier 94 Landfill Order No. R2-2003-0055. Updated Waste Discharge Requirements and Rescission of Order No. 87-061 for: City and County of San Francisco, San Francisco Port Commission, Pier 94 Class III Landfill, San Francisco County*, June 18, 2003.

[28] Ibid.

[29] TR/RYCG, *Geotechnical Investigation Pier 94 Backland Improvements San Francisco, California*, July 5, 2012.

under this alternative compared to the proposed project. As with the proposed project, impacts related to interference with emergency response would be minimized through implementation of a Traffic Control Plan. Fire risks would be minimized through compliance with existing fire safety codes and industry standards. For the reasons stated above, as with the proposed project, all impacts related to hazards and hazardous materials would be less than significant.

Mineral Resources, Energy Resources, and Water Use

Similar to the proposed project, this alternative would have no impact on mineral resources because the Pier 94 Backlands does not contain substantial mineral resources or locally important mineral resource recovery sites.

Construction energy needs would be slightly higher than those of the proposed project, given that this alternative would include construction of pipelines between the Pier 94 Backlands and the SEP. However, this energy consumption would not be considered a wasteful use of energy, for the reasons explained for the proposed project; thus, this impact would be less than significant. Energy produced by digester gas facilities under this alternative would be similar to the energy produced under the proposed project and would be sufficient to provide enough power to operate the project, although this energy would not be available to SEP facilities. Thus, other SEP facilities would remain reliant upon Hetch Hetchy power (similar to existing conditions). The impact of operation of this alternative on energy, fuel, and water use would be less than significant. Cumulative impacts of this alternative would be less than significant, similar to those identified for the proposed project. This alternative would not reduce the amount of power needed from Hetch Hetchy; however, the alternative would not encourage activities that would result in the use of large amounts of these resources, or result in their use in a wasteful manner.

Agriculture and Forest Resources

Like the proposed project, the Pier 94 Backlands Alternative would not affect any land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, nor would it affect any land zoned or used for either agricultural or forestry use. Therefore, there would be no impact related to agriculture or forest resources.

6.3.3 Alternative C: Historical Resources Relocation

6.3.3.1 Description

Alternative C, the Historical Resources Relocation Alternative, would consist of full construction and operation of the BDFP as proposed, plus the relocation of Central Shops Buildings A and B to a similar industrial setting in San Francisco. The relocation, rehabilitation, and reuse of Buildings A and B would be consistent with the Secretary of the Interior's Standards, and would reduce the significant and unavoidable impact on historical resources under the proposed project to a less-than-significant level. Rather than demolishing Buildings A and B, the SFPUC would dismantle these structures such that they could be relocated consistent with the Secretary of the Interior's Standards for Rehabilitation, and the character-defining features of these historical resources would be retained.[30] Following relocation, Buildings A and B would be rehabilitated and reused. This would be considered a full preservation alternative with respect to an identified individual historical resource. However, this alternative would neither reduce nor avoid the significant and unavoidable cumulative impact on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*.

Under this alternative, construction of BDFP facilities at the proposed project site would be delayed by about one year to accommodate the disassembly and transportation and relocation of Buildings A and B; otherwise, the characteristics of the BDFP (location, components, operation, maintenance, and construction) would be the same as described in Chapter 2, *Project Description*, and are not discussed in detail in this section. The description below, instead, focuses on the relocation of Central Shops Buildings A and B.

Site Location

The relocation of Buildings A and B would require a site of about 130,000 square feet (about three acres) in area, in order to allow sufficient buffer around the buildings themselves to accommodate vehicular circulation and to retain a similar setting to their original location. The SFPUC has identified a site at Pier 90, bisected by Amador Street east of Illinois Street and Cargo Way, as a potentially feasible new location for Buildings A and B (refer to **Figure 6-5**). Buildings A and B could be relocated to two sites on either side of Amador Street (600 Amador Street and 450 Amador Street). The existing buildings at 600 Amador Street would be relocated or demolished prior to relocation of Buildings A and B. No buildings would be demolished at 450 Amador Street. The relocation site is referred to as the Pier 90 site in this document. Construction staging would occur primarily at the Pier 90 site, with additional staging at the Pier 94 Backlands if needed.

The City through the Port Commission owns the Pier 90 site. American Storage, a storage company, currently leases 600 Amador Street. Central Concrete Supply, Inc., a ready mix concrete supplier, currently leases 450 Amador Street. These two uses are typical of land uses in the surrounding area. While this site is subject to the public trust (similar to Pier 94 Backlands site discussed above), the relocation of Central Shops Buildings A and B to this site would not require State Lands Commission approval.[31]

The 600 Amador Street site is bounded to the south by the Pier 94 Backlands and the San Francisco Bay Railroad railyard; a rendering plant and concrete preparation plant are located to the east along Amador Street. Vacant grain silos stand to the east of 450 Amador Street. Islais Creek Channel borders the area to the north. Cargo Way and Third Street separate the site from warehouses and commercial uses to the west.

[30] Secretary of Interior’s Standards for Rehabilitation (36 CFR 67).
[31] If the Port were to rent out the relocated buildings for a long-term use that was not consistent with the public trust, then that use would require approval by the State Lands Commission.

SOURCE: ESA+Orion; Google Earth, 2016

SFPUC Biosolids Digester Facilities

Figure 6-5
Potential Site and Layout for Historical Resources Relocation Alternative

Buildings along Amador Street near the Pier 90 site are used for industrial and maritime purposes, and include multi-story concrete grain silos, building materials storage, large metal storage tanks associated with a rendering facility, and multi-story concrete and metal structures associated with concrete processing.

The Pier 90 site is not within the Bay Conservation and Development Commission (BCDC) 100-foot shoreline band but is within a "port priority use area" (designated in the *San Francisco Bay Area Seaport Plan*). While specific future uses of Buildings A and B have not been determined, it is presumed that the future uses would be consistent with the existing use of the Central Shops, as well as with allowable uses within a port priority area such as light industrial uses.

For the purposes of this analysis, it is assumed that the City through the Port Commission would retain ownership of the Pier 90 site, and that the Port would manage land use at the site.

Components

In addition to construction of the BDFP as described in Chapter 2, *Project Description*, this alternative would relocate Buildings A and B to the Pier 90 site. The existing buildings at 600 Amador Street would be relocated or demolished prior to relocation of Buildings A and B. No buildings would be demolished at 450 Amador Street. Dismantling, transport, and storage of Buildings A and B would occur before BDFP construction begins at the SEP. Prior to reconstruction of Buildings A and B, a slab foundation would be installed at the Pier 90 site, and some utilities (such as water, sewer, and power) would be connected.

Operations and Maintenance

As discussed above, future use of Buildings A and B would likely retain an industrial use in a manner consistent with the *Port of San Francisco, Waterfront Land Use Plan* land uses. It would be speculative to presume a particular use for the relocated Buildings A and B beyond this basic consistency assumption, so the impact analysis below addresses only this basic assumption.

Construction

Construction Schedule, Work Force, and Work Hours

Construction of the BDFP facilities would occur as described in Chapter 2, *Project Description*; however, the demolition or relocation of buildings at Pier 90 and subsequent dismantling and transport of Buildings A and B to Pier 90 would occur at the beginning of the construction schedule, and would add about one year to the total construction schedule. Construction would thus occur over an approximately six-year period. For purposes of this evaluation, it is assumed that 75 construction workers (approximately half of the work force required for site preparation of the BDFP) would be needed for disassembly and transportation of Buildings A and B and site preparation at the Pier 90 site. Construction work hours are assumed to be the same as for the proposed project.

Construction Staging, Worker Parking, Truck Access, and Lane Closures

As described above, construction staging could occur at the same locations as proposed for the BDFP, as well as at the Pier 90 site. Construction worker parking would be provided at the Pier 90 site and the Pier 94 Backlands if needed. Trucks transporting Buildings A and B would travel between the existing Central Shops site and 600 Amador Street or 450 Amador Street along either the same route as the equipment deliveries and concrete trucks route identified in Figure 2-15 in Chapter 2, *Project Description*, for the BDFP (exiting the SEP on Rankin Street, then continuing to the Pier 90 site using Evans Avenue, Third Street, and Cargo Way/Amador Street), or would exit the SEP on Jerrold Avenue and then continue on to Phelps Street, Third Street, and Cargo Way/Amador Street. Additional materials brought to the Pier 90 site would be delivered via Evans Avenue, Third Street, or Illinois Street. Temporary lane closures may occur during construction.

Construction Methods

Construction methods to be used for relocating Buildings A and B have not been determined but would likely include disassembly of the structures, construction of slab on grade foundations (Pier 90 is on artificial fill placed between 1926 and 1938) and concrete perimeter walls, and reassembly of the buildings. Buildings A and B would be required to be constructed in accordance with the State Historical Building Code and the Secretary of the Interior's Standards for the Treatment of Historic Properties. Construction would require the use of similar equipment to that included in Table 2-11 in Chapter 2, *Project Description*. The total amount of earthwork under the Historical Resources Relocation Alternative would be slightly greater than under the proposed project due to construction activities required for site preparation at Pier 90.

Permits and Approvals

Relocation of Buildings A and B would require approval from the Port, as the Pier 90 site is under its jurisdiction; thus, this alternative would require all the same the permits and approvals required for the proposed project (identified in Chapter 2, Section 2.7, Intended Uses of this EIR and Required Actions and Approvals).

6.3.3.2 Ability to Meet Project Objectives

Because the Historical Resources Relocation Alternative would involve full implementation of the BDFP as proposed, this alternative would meet all of the proposed project objectives (see Table 6-2), with one possible exception. Due to the unknown time and costs to acquire a suitable relocation site for Buildings A and B, conduct site preparations, and take the precautions needed to dismantle and reconstruct Buildings A and B consistent with the Secretary of the Interior's Standards, it is unknown if this alternative would allow for rate payer affordability. The estimated one-year extension in project schedule for the dismantling and relocation would be considered within a reasonable range for the SFPUC to partially meet its objective for timely construction of the BDFP facilities.

6.3.3.3 Environmental Impacts

With a few exceptions, the Historical Resources Relocation Alternative would result in all the same impacts as those identified for the proposed project in Chapter 4, *Environmental Setting and Impacts*, plus impacts associated with construction and operation of the relocated buildings at Pier 90. The exceptions relate to the historical resource impacts and assumptions for cumulative impacts, as discussed below.

This alternative would substantially reduce the severity of impacts on historic architectural resources (Impact CR-1). Under this alternative, the project-level impact on historical architectural resources would be less than significant because Central Shops Building A and B would be relocated, rehabilitated, and reused in a similar industrial setting in San Francisco in a manner consistent with the Secretary of the Interior’s Standards. However, as with the proposed project, the cumulative impact on historical architectural resources would be significant and unavoidable under the Historical Resources Relocation Alternative, even with mitigation (Mitigation Measure M-CR-1, Documentation of Historical Resources and Interpretive Display). This is because under cumulative conditions, the SFPUC would potentially demolish all of the existing digesters and their central control buildings (refer to Chapter 4, Section 4.1, Table 4.1-1), which are contributors to the eligible *Southeast Treatment Plant Streamline Moderne Industrial Historic District*, and implementation of this alternative would demolish Building 870 (a contributor to the historic district) plus replace the function of the existing digesters and allow for the future demolition of the digesters and control buildings. Therefore, similar to the proposed project, the alternative's contribution to the cumulative adverse impact on this eligible district would be cumulatively considerable, and a significant, unavoidable cumulative impact on a historic district.

With respect to the assumptions for cumulative impacts, this alternative would delay construction of facilities at the BDFP site by about one year. Some of the cumulative impacts disclosed in Chapter 4, *Environmental Setting and Impacts*, are directly related to the degree to which construction of cumulative projects would overlap with the BDFP. Consequently, some of those cumulative impacts could slightly differ under this alternative, as described below.

The impact discussions described below focus on the construction and operational impacts at the Pier 90 site and do not repeat the impacts at the project site and staging areas that would be the same under this alternative as those of the proposed project.

Land Use

Existing uses in the Pier 90 area include a storage company, concrete supplier, building materials storage and a rendering facility. With implementation of the Historical Resources Relocation Alternative, the building materials storage and a parking lot operated by the concrete supplier would be replaced by Buildings A and B. Moving the buildings to this site would not close any roads, and existing uses in the Pier 90 vicinity do not constitute an established community. Consequently, this alternative would not physically divide an established community.

Development at Pier 90 would be subject to policies and other provisions of the City's *San Francisco General Plan* and *Bayview Hunters Point Area Plan* and the Port's *Waterfront Land Use Plan*. Although specific future uses have not been identified, potential uses of Buildings A and B under this alternative (e.g., light industrial) are assumed not to conflict with the policies set forth in these plans.

Aesthetics

At Pier 90, the two relocated Central Shops buildings would constitute new permanent industrial buildings near other industrial buildings and facilities. While Central Shops Building B would be taller and more massive than the existing storage facility buildings it would replace, the character of both of the relocated buildings would be similar to the visual character of nearby industrial facilities. The relocated buildings would be partly visible from parts of Hilltop Park and Adam Rodgers Park to the south; however, the relocated Central Shops buildings would not block views of the Bay from these parks nor otherwise obstruct scenic vistas. While the relocated buildings would be highly visible from the section of the Bay Trail on Cargo Way and Illinois Street where these two streets intersect with Amador Street, the area is already substantially developed with industrial land uses, and existing views of the Bay from this part of the San Francisco Bay Trail are substantially interrupted by existing buildings and other structures that border this part of Amador Street. Therefore, while the Historical Resources Relocation Alternative, alone and in combination with cumulative projects, would intensify the industrial uses at the Pier 90 site, the relocated buildings would not degrade the visual character of their respective sites or surroundings, adversely affect a scenic vista, or damage scenic resources. Thus, these impacts would be less than significant. It is assumed that no nighttime construction would be required at the Pier 90 site, so there would be no construction-related light and glare impacts at that location. As with the proposed project, compliance with applicable regulations and policies (California Green Building Code Section 5.106.8 and *San Francisco Better Streets Plan* policy) would ensure that light and glare from operation of the relocated Buildings A and B would be less than significant.

Population and Housing, Growth Inducement

Similar to the proposed project, the Historical Resources Relocation Alternative would not displace housing, would not increase treatment capacity at the SEP, and would not extend roads or infrastructure into an undeveloped area. However, the relocation of the Central Shops buildings to Pier 90 would displace two businesses that currently lease the 450 and 600 Amador Street sites. The number of jobs associated with these businesses is small, and the employees displaced from their current employment sites would be expected to find employment at the same businesses in a different location or at other jobs in San Francisco or the surrounding area. Therefore, the displacement of the workers at these two sites would not create substantial demand for new housing or necessitate the construction of replacement housing elsewhere, and the impact of the Historical Resources Relocation Alternative related to displacement of people, while greater than that of the proposed project, would be less than significant. The construction-phase employment period for the Historical Resources Relocation Alternative would be extended by about one year and require about 75 additional construction workers to dismantle and relocate the Central Shops buildings. This is not a substantial increase in the time and work force requirements assumed for the proposed project. As under the proposed project, construction workers would largely be drawn from the local and regional work force and would commute (rather than relocate) to the area. Therefore, the relocation component of the Historical Resources Relocation Alternative would not induce population growth, displace housing units, create substantial demand for additional housing, or displace a substantial number of people, and population and housing and growth inducement impacts would be less than significant.

Cultural Resources

Historical Resources

The Historical Resources Relocation Alternative would consist of full construction and operation of the BDFP as proposed; however, rather than demolish Central Shops Buildings A and B, this alternative would relocate these buildings to a similar industrial setting in San Francisco. The dismantlement, relocation, rehabilitation, and reuse of Buildings A and B would be consistent with the Secretary of the Interior's Standards, and the character-defining features of these resources would be retained. Therefore, this alternative would substantially reduce the severity of a significant impact on historical architectural resources. Like the proposed project, this alternative would include demolition of Building 870, which is an identified contributor to the eligible *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. However, as with the proposed project, removal of Building 870 would have a less-than-significant impact on the overall significance and historic integrity of the district because the building is not individually eligible for listing, and because the removal of this one building would not substantially degrade the historical integrity of the district.

Because the dismantlement, relocation, rehabilitation, and reuse of Buildings A and B would be consistent with the Secretary of the Interior's Standards, and because the demolition of Building 870 would result in a less-than-significant impact on the historic district, the impact on historical architectural resources would be less than significant under this alternative, and no mitigation measures are necessary. However, as with the proposed project, under cumulative conditions, the SFPUC would demolish all of the existing digesters and their central control buildings (refer to Chapter 4, Section 4.1, Table 4.1-1, Project 12), which are contributors to the eligible *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. Therefore, as with the proposed project, the Historical Resources Relocation Alternative's contribution to the cumulative adverse impact on this eligible historic district would be cumulatively considerable, and the cumulative impact would be significant and unavoidable, even with mitigation (Mitigation Measure M-CR-1, Documentation of Historical Resources and Interpretive Display).

Archeological Resources and Human Remains

The proposed relocation site for Buildings A and B (Pier 90, bisected by Amador Street east of Illinois Street and Cargo Way) consists of artificial fill. Historic structures present when land reclamation began, such as shipwrecks or wharf remains, could be extant and could be directly affected by construction excavations if erection of Buildings A and B entails excavation or pile driving that would penetrate the fill. Because the proposed relocation site consists of artificial fill, there is a low potential for the presence of middle or later period prehistoric archeological sites. It is assumed that Buildings A and B would be relocated to slab on grade foundations similar to their existing foundations. This work would not require substantial excavation, and there would be a low potential to encounter older deeply buried prehistoric sites submerged by the Bay.

Nevertheless, the potential remains that site preparation activities could encounter archeological resources and human remains at the Pier 90 site, a potentially significant impact. Implementation of Mitigation Measure M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery) and Mitigation Measure M-CR-2b (Accidental Discovery of Archeological Resources) would reduce impacts on archeological resources and human remains at the proposed relocation site to a less-than-significant level. Therefore, with mitigation, the impact on archeological resources and human remains would be less than significant.

Transportation and Circulation

The same peak number of construction trucks and construction workers as the BDFP would occur for the Historical Resources Relocation Alternative, although the dates of these peaks would shift. The same temporary street closures would occur during construction, with the addition of potential temporary closures of roadways between the SEP and the Pier 90 site during transport of large pieces of Buildings A and B, but these closures would be of short duration and would represent less-than-substantial changes to current vehicle travel and circulation, based on the existing traffic volumes and the duration of closures. Temporary disruption of the bicycle and pedestrian facilities on Cargo Way and Illinois Street could also occur during relocation of Buildings A and B; however, as with the BDFP, a Traffic Control Plan containing measures to reduce transportation and circulation hazards associated with construction activities would be prepared. As with the proposed project, construction impacts of this alternative would be less than significant.

Operational haul routes of vehicles associated with SEP operations would be the same as those identified for the proposed project. For this reason, operation of the Historical Resources Relocation Alternative would result in transit, bicycle and pedestrian travel, freight rail, parking, and traffic safety hazard impacts that would be similar to those described for the proposed project.

While the dates of peak construction activity would shift by about one year under the Historical Resources Relocation Alternative, the same construction cumulative scenario as evaluated for the proposed project would apply because no additional projects in the SEP vicinity from the cumulative projects list would be under construction in 2023 to 2024. For this reason, the cumulative construction impacts of the Historical Resources Relocation Alternative on transportation and circulation would be similar to those of the proposed project.

The operational cumulative scenario for the relocation component of the Historical Resources Relocation Alternative is also the same as that analyzed for the BDFP. Similar to the BDFP, the relocation component of the Historical Resources Relocation Alternative, along with other cumulative projects in the operational cumulative scenario, would not permanently reroute public transit, bicycle, or pedestrian routes in the area, and would not include activities using freight rail.

Noise and Vibration

In addition to having the same potentially significant but mitigable construction noise impact identified for the BDFP at the BDFP site, the Historical Resources Relocation Alternative would result in construction-related noise increases in the Pier 90 area (assuming Buildings A and B are reconstructed on this alternative site). Because of the added development in the Pier 90 area, noise impacts would be slightly greater when compared to those of the proposed project; however, implementation of this alternative is not expected to result in any new significant construction-related and operational noise impacts on sensitive receptors, due to the absence of noise-sensitive receptors in the Pier 90 vicinity.

This alternative would result in the same significant cumulative construction-related noise impacts on nearby sensitive receptors when combined with other SEP projects. While construction of this alternative could overlap with construction of other cumulative projects in the Pier 90 area, any cumulative noise or vibration impacts are expected to be less than significant due to the absence of sensitive receptors in the immediate vicinity. Any cumulative operational noise or vibration increases at the Pier 90 site are also expected to be less than significant for the same reason (absence of sensitive receptors). Therefore, cumulative construction-related and operational noise and vibration impacts would be slightly greater than those of the proposed project due to the added development in the Pier 90 area, but there would be no new significant construction-related or operational cumulative noise and vibration impacts.

Air Quality

Under this alternative, criteria pollutant emissions and health risks would remain substantially the same as those of the proposed project, since the Central Shops maintenance activities were assumed to continue to occur within the air basin but at a different location (i.e., no emissions reductions were assumed due to removal of the Central Shops activities from the SEP site), even though new uses at the relocated Buildings A and B could incrementally add to long-term operational emissions. Given the size of Buildings A and B, operational emissions of a new use at this site would not be expected to be significant. (If the new use were a relocated use from another site within the same air basin, then operational emissions would be the same as those of the proposed project.) Therefore, this alternative would not substantially increase the operational emissions and health risks estimated for the proposed project.

This alternative would result in slightly more short-term criteria pollutant emissions resulting from relocation or demolition of existing facilities on the Pier 90 site and relocation of the Central Shops buildings. Depending on the timing of these activities at the Pier 90 site, these added emissions would further increase the project’s exceedances of the significance threshold for NOx if the emissions occurred during Construction Years 1 or 3, and such an impact would be significant and unavoidable under the proposed project as well as under this alternative.

Despite this additional increase in construction-related criteria air pollutant and TAC emissions compared to the proposed project, the added construction-related health risks and hazards are expected to be less than significant (as with the proposed project) because there are few, if any, sensitive receptors located within 1,000 feet downwind of the Pier 90 area. Likewise, the potential for nuisance odors to adversely affect downwind sensitive receptors would also be less than significant under this alternative.

Like the BDFP site, the Pier 90 area is located within an APEZ. As with the proposed project, implementation of the Historical Resources Relocation Alternative would not be expected to expand the APEZ.

As with the proposed project, even with somewhat greater construction-related emissions under this alternative, impacts associated with conflicts with the Clean Air Plan would be less than significant with mitigation.

This alternative’s contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than that of the proposed project due to the added emissions associated with Central Shops relocation and rehabilitation as well as dismantling or demolition of buildings at the Pier 90 site, and as with the proposed project, this cumulative impact would be significant and unavoidable, even with implementation of measures like Mitigation Measures M-AQ-1a and M-AQ-1b. Cumulative impacts on health risks and hazards associated with TACs would be similar to those of the proposed project and would be less than significant.

Greenhouse Gas Emissions

This alternative would have the same energy capture potential (from digester gas produced) and the same increase in biosolids reuse opportunities as the proposed project, and would be subject to the same local regulations adopted to reduce GHG emissions. Energy produced by digester gas facilities under the Historical Resources Relocation Alternative would be the same as the energy produced under the proposed project. Overall, under this alternative, despite the minor increase in construction activities at Pier 90, impacts related to GHGs are still expected to be less than significant.

Wind and Shadow

Wind

Similar to the BDFP site, the Pier 90 site does not contain any areas subject to wind comfort or wind hazard criteria established in the San Francisco Planning Code. The nearest public areas to the portion of the Pier 90 site to which Buildings A and B would be relocated under this alternative (shown on Figure 6-5) are Amador Street, which has no sidewalks, and Illinois Street and Cargo Way, which both include a segment of the Bay Trail. The Pier 90 site is approximately 120 feet northeast of Cargo Way and approximately 120 feet east of Illinois Street. The Bayview Gateway open space is located between Third Street, Cargo Way, Illinois Street, and the Illinois Street bridge approach, which is west of the Pier 90 site. As at the BDFP site, winds in the area are typically from the west/southwest and wind speeds are light. Changes in wind patterns resulting from this alternative would be less than significant at the SEP, the same as described for the BDFP. Changes in wind patterns resulting from the relocation of Buildings A and B would generally occur to the east (downwind) of the Pier 90 site along either side of Amador Street. This alternative would reconstruct Buildings A and B, which have a maximum height of two stories.

Given existing wind conditions and the absence of public areas immediately downwind, implementation of the relocation component of the Historical Resources Relocation Alternative would not alter wind in a manner that would substantially affect public areas and, as with the proposed project, this impact would be considered less than significant. As stated above, any changes in wind patterns resulting from the relocation of Buildings A and B would generally occur to the east (downwind) of the Pier 90 site, and therefore no significant cumulative impacts related to wind would be anticipated.

Shadow

The Bayview Gateway open space is the nearest public open space to the Pier 90 site. The eastern edge of the Bayview Gateway open space is about 150 feet west of the portion of the Pier 90 site to which Building A would be relocated. Neither Building A nor Building B would exceed 40 feet in height; thus, Section 295 of the San Francisco Planning Code would not apply to the relocation of these buildings. The Historical Resources Relocation Alternative could cast new shadow on bicycle routes and the Bay Trail (approximately 150 feet west) along Illinois Street, but new shadow would be transitory in nature and would not substantially affect the function of these pathways (which are generally not used as places for extended periods of stationary activity). The open space recreation facilities are too distant to be affected by shadows created by relocated Buildings A and B. Consequently, implementation of the relocation component of the Historical Resources Relocation Alternative would not create shadow in a manner that could substantially affect outdoor recreation facilities or other public areas and, as with the proposed project, this impact would be less than significant. Given the location and nature of cumulative projects in the vicinity of the Pier 90 site, no significant impacts related to shadow would be anticipated.

Recreation

Recreational resources in the vicinity of the Pier 90 site include the Bayview Gateway open space and the Bay Trail along Illinois Street. Users of the Bay Trail along Illinois Street could be temporarily disturbed by construction activities associated with the relocation of Buildings A and B; however, this disturbance would be temporary, and use of the Bay Trail is transitory. Similar to the proposed project, relocation of Buildings A and B would not result in the physical deterioration or degradation of recreational resources.

In combination with the Blue Greenways Project, Asphalt and Concrete Recycling and Production Plant, and Pier 96 Bulk Export Terminal, use of the Bay Trail could increase due to improvements to the Bay Trail and the presence of additional employees in the area. However, the incremental increase in use of these resources would not result in substantial physical degradation. These cumulative projects would have less-than-significant incremental impacts related to recreational resources. For these reasons, similar to the proposed project, the relocation component of the Historical Resources Relocation Alternative would have less-than-significant impacts related to recreational resources.

Utilities and Service Systems

While Central Shops Buildings A and B would not be demolished under the Historical Resources Relocation Alternative, this alternative would result in a similar volume of building debris requiring disposal because the existing structures at Pier 90 would be relocated or demolished to accommodate the relocated buildings. The Historical Resources Relocation Alternative would also produce slightly more soil requiring disposal because of construction activities required for site preparation for reconstruction of Buildings A and B. Wastewater from the relocated buildings would be conveyed to the SEP via the City's combined sewer system and stormwater would drain to the existing separate storm sewer system at Pier 90. Solid waste disposal at the relocated buildings would be subject to the same regulatory requirements as the proposed project. As with the proposed project, compliance with applicable regulatory requirements would ensure that the Historical Resources Relocation Alternative would not result in any impacts with respect to utilities or services systems. All cumulative development in San Francisco would be subject to the same regulatory framework as the Historical Resources Relocation Alternative, and compliance with these existing regulations would serve to reduce any cumulative impacts.

For the reasons stated above, as with the proposed project, all impacts related to utilities and service systems would be less than significant, and no mitigation would be required.

Public Services

During the disassembly and transport of Buildings A and B, about 75 workers would be needed for the Historical Resources Relocation Alternative; this would occur prior to construction at the project site. The subsequent rehabilitation and construction of Buildings A and B at Pier 90 would occur concurrently with BDFP construction activity at the project site; therefore, the total average construction work force would be higher than the number of workers identified for the proposed project due to these extra 75 workers during this rehabilitation period. As under the proposed project, construction workers would largely be drawn from the local and regional work force and would commute (rather than relocate) to the area. Therefore, similar to the proposed project, the relocation component of the Historical Resources Relocation Alternative would not result in increased response times such that new or physically altered facilities would be required to maintain service, and the impact on public services would be less than significant.

Biological Resources

Similar to the project, the relocation component of the Historical Resources Relocation Alternative could cause impacts on nesting birds and roosting bats, as a result of demolition of existing buildings at 600 Amador Street, building re-construction, and site preparation. Direct and indirect disturbances to bats potentially roosting in underutilized industrial buildings or trees could occur from construction-associated noise or increased human activity in the area. Increased lighting, or the reconstruction of Building A and B, can also lead to the disturbance of roosting bats. Similarly, birds potentially nesting in the street trees along Amador Street in front of the proposed location of Buildings A and B could be affected by project construction activities that generate noise and visual disturbance. Construction activities that may alter the ambient noise environment or introduce short-term loud noise events include but are not limited to building demolition and grading or ground disturbance. Noise pollution can be detrimental to wildlife, and bird populations are particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors.

Trees along Amador Street in front of the proposed location for Buildings A and B would be exposed to potential damage or removal during construction, similar to trees under the proposed project. Absent more specific information regarding extent of demolition and construction under the Historical Resources Relocation Alternative, this analysis conservatively assumes that any of the trees along Amador Street in front of the 450 and 600 Amador Street lots would be removed or damaged, and that damage may include mechanical damage to tree trunks and canopies, root damage resulting from grading and excavation activities, and root damage resulting from soil compaction. Similar to the project, this alternative would protect these trees through implementation of a Tree Protection Plan, described in Chapter 2, Section 2.6.5.5, Tree Removal and Protection Plan, which would be submitted to San Francisco Public Works (SFPW). The commitment to tree replacement and protection would conform with Article 16 of the San Francisco Public Works Code.

Nesting birds, roosting bats, and street trees potentially affected by the implementation of the Historical Resources Relocation Alternative would be subject to the same standard construction measures and regulatory conditions as those identified for the project. As with the project, implementation of the SFPUC's Standard Construction Measure 7 would reduce impacts on birds potentially nesting in the street trees along Amador Street in front of the proposed location of Buildings A and B to less than significant levels. Implementation of Mitigation Measure M-BI-1 (Protective Measures for Special Status Bats and Maternity Roosts) would reduce potentially significant impacts on roosting bats at the proposed Buildings A and B relocation site to a less-than-significant level. Therefore, the impacts of the Historical Resources Relocation Alternative on biological resources would be less than significant with mitigation. Cumulative projects in the vicinity of Pier 90 could also generate noise during construction and operation that could contribute potentially significant impacts on biological resources. However, with implementation of the identified mitigation measure, the remaining contribution to this cumulative impact from the relocation component of this alternative would be less than cumulatively considerable, and as with the proposed project, the cumulative impact would be less than significant with mitigation.

Geology, Soils, and Paleontological Resources

Due to construction activities required for site preparation at Pier 90, the total amount of earthwork under the Historical Resources Relocation Alternative would be slightly greater than under the project. However, impacts related to soil erosion would remain less than significant with implementation of the requirements of Article 4.1 of the San Francisco Public Works Code and the SWRCB NPDES Permit. Central Shops Buildings A and B would be retrofitted to comply with the current San Francisco Building Code and applicable engineering design standards to withstand seismic hazards including ground shaking and seismically induced ground failures such as liquefaction. This would be an improvement over existing conditions. The artificial fill and young bay mud that underlie Pier 90 have a low potential for paleontological resources.

For the reasons stated above, as with the proposed project, all potentially significant impacts related to geology, soils, seismicity, and paleontology would be less than significant with implementation of the mitigation measures required for the project.

Hydrology and Water Quality

Due to construction activities required for site preparation at Pier 90, the total amount of earthwork and construction-related groundwater dewatering under the Historical Resources Relocation Alternative would be slightly greater than under the project. However, impacts related to degradation of water quality would remain less than significant with implementation of City requirements (i.e., Articles 4.1 and 4.2 of the San Francisco Public Works Code and the SWRCB General Construction Stormwater NPDES Permit). Compliance with City requirements (Article 4.1 of the San Francisco Public Works Code and the City's Stormwater Design Guidelines) would preclude adverse water quality effects from discharge of stormwater from the relocated Buildings A and B.

Pier 90 is located adjacent to Islais Creek and could be inundated by 2050 as a result of sea level rise (refer to Chapter 4, Section 4.16, Figure 4.16-3). However, in accordance with the City's Guidance for Incorporating Sea Level Rise into Capital Planning, it is assumed that the relocated Central Shops Buildings A and B would be appropriately designed to withstand and adapt to sea level rise (see Chapter 4, Section 4.16.2, Regulatory Framework, for a description of this guidance). Because there are existing structures at the Pier 90 site that would be replaced by relocated Buildings A and B, in general, the relocated buildings would not substantially alter the direction of flood flows compared to what would occur under existing conditions, and the relocated buildings would not exacerbate future flooding conditions. Unlike the BDFP site, much of Pier 90 is located within a potential tsunami zone (refer to Chapter 4, Section 4.16, Figure 4.16-6), and relocated Building A could be located within this zone. Tsunamis are extremely rare. However, if the National Warning System issues a tsunami warning, the City would initiate its outdoor warning system and issue emergency instructions should the San Francisco waterfront be threatened. Use of this system would allow for adequate time to warn people to avoid the area in the event of a tsunami and for evacuation of the area should workers be present when the warning is issued. Although some damage to relocated Buildings A and B could occur, these buildings would be retrofitted to comply with the current San Francisco Building Code and applicable engineering design standards, which would increase the buildings' resilience to damage in the event of a tsunami. Both the sea level rise impact and the tsunami impact would be of greater magnitude than under the proposed project but would remain less than significant.

For the reasons stated above, as with the proposed project, all impacts related to hydrology and water quality would be less than significant and no mitigation would be required.

Hazards and Hazardous Materials

While Buildings A and B would not be demolished under the Historical Resources Relocation Alternative, this alternative would result in a similar volume of hazardous building materials requiring abatement and disposal because the existing structures at Pier 90 could be demolished (or relocated) to accommodate the relocated buildings. The amount of earthwork under the

Historical Resources Relocation Alternative would be slightly greater than under the proposed project due to construction activities for site preparation at Pier 90.

As with the proposed project, the assessment and management of site risks related to construction at Pier 90 would be ensured through compliance with the Maher Ordinance, Article 22A of the San Francisco Health Code, and the California Air Resources Board Asbestos Air Toxics Control Measure. Any use of hazardous materials at the relocated buildings would also be subject to the requirements of Article 21 of the San Francisco Health Code. Similarly, impacts related to interference with emergency response during construction would be minimized through implementation of a Traffic Control Plan. Fire risks would be minimized through compliance with existing fire safety codes and industry standards.

For the reasons stated above, as with the proposed project, all impacts related to hazards and hazardous materials would be less than significant.

Mineral and Energy Resources

Similar to the proposed project, this alternative would have no impact on mineral resources because the Pier 90 site and the SEP do not contain substantial mineral resources or locally important mineral resource recovery sites.

Construction energy needs would be slightly higher than those of the project, given that this alternative would include relocation of Buildings A and B. However, this energy consumption would not be considered a wasteful use of energy, for reasons similar to those explained for the project (similar construction equipment meeting local efficiency standards would be used, and the same regulations regarding recycling and water use would apply); thus, this impact would be less than significant. Additional power would be needed to supply relocated Buildings A and B, however. Operation of relocated Buildings A and B would use Pacific Gas and Electric Company (PG&E) power rather than Hetch Hetchy power, and therefore this alternative would result in an incremental increase in energy demand compared to the proposed project. The impact of operation of the relocation component of the Historical Resources Relocation Alternative on energy, fuel, and water use would be less than significant. Cumulative impacts of this alternative would also be less than significant, similar to those identified for the proposed project. This alternative would not reduce energy demand; however, the alternative would not encourage activities that would result in the use of large amounts of these resources, or result in their use in a wasteful manner.

Agriculture and Forest Resources

Like the proposed project, the relocation component of the Historical Resources Relocation Alternative would not affect any land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, nor would it affect any land zoned or used for either agricultural or forestry use. Therefore, there would be no impact related to agriculture or forest resources.

6.3.4 Alternative D: SEP South/Quint Street

6.3.4.1 Description

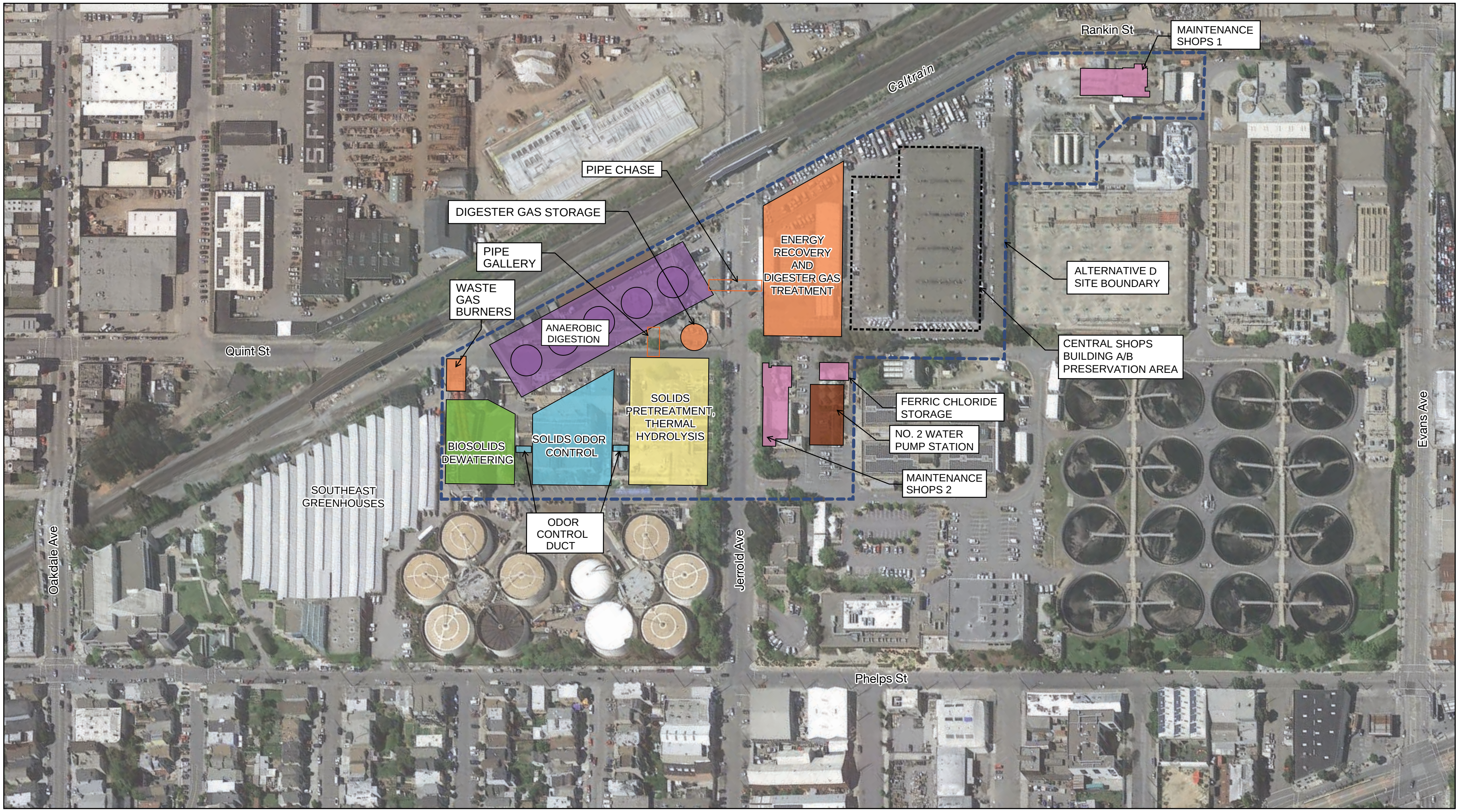
Alternative D, the SEP South/Quint Street Alternative, would consist of full construction and operation of the same processes and facilities as the proposed project, except that the project facilities would be reconfigured and located within different portions of the SEP boundaries, the Asphalt Plant site, portions of the Central Shops site, and within the right-of-way of Quint Street between Jerrold Avenue and the Caltrain right-of way. Central Shops Buildings A and B would be retained in place. This would be considered a full preservation alternative with respect to an identified individual historical resource. However, this alternative would neither reduce nor avoid the significant and unavoidable cumulative impact on the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. This alternative was selected for evaluation because it would avoid a significant impact on a historical resource and would avoid the site acquisition challenges of Alternative B, Pier 94 Backlands, and physical difficulties associated with relocating Central Shops Buildings A and B under Alternative C above. **Figure 6-6** shows the conceptual layout of the SEP South/Quint Street Alternative.

Site Plan

Similar to the proposed project, this alternative would have digesters aligned parallel to the Caltrain right-of-way, but instead of being within the Central Shops site they would be located within the Asphalt Plant site and would extend across Quint Street into SEP South. The solids pretreatment, thermal hydrolysis process (THP), anaerobic digesters, solids odor control, biosolids dewatering facilities, and waste gas burners would all be located within SEP South, requiring demolition of about 25 existing structures/facilities that are part of the existing solids treatment process (refer to Table 6-1, above, for list of structures to be demolished). The energy recovery and gas treatment facilities would be located on the non-historic portion of the Central Shops site. Maintenance Shops 1 would be located within SEP North boundaries along Rankin Street. Maintenance Shops 2, No. 2 Water Pump Station, and iron chloride storage tanks would generally be in the same locations as under the proposed project, within SEP North along Jerrold Avenue. In total, the facilities would span about 16 acres, including the area to be preserved around Central Shops Buildings A and B.

Treatment of Historical Resources

Central Shops Buildings A and B and the immediate surrounding area would be preserved, thereby avoiding the significant impacts on this historical architectural resource that would occur with their demolition under the project. Like the proposed project, this alternative would include demolition of Building 870, which is an identified contributor to the eligible *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. In addition, this alternative would include demolition of numerous structures in SEP South, within and adjacent to this eligible historic district, including at least seven structures identified as contributors. This contrasts with the proposed project, which would demolish one building within the historic district in SEP North but would not include demolition of any structures in SEP South. However, the future potential demolition of the existing



PROJECT SITE
PIPE GALLERY, CHASE OR TRENCH
ODOR CONTROL
PRE-DIGESTION SOLIDS PROCESSING
ANAEROBIC DIGESTION, DIGESTED SOLIDS STORAGE, AND THERMALLY HYDROLYZED (THS) SLUDGE COOLING
CLASS A BIOSOLIDS DEWATERING, STORAGE & LOADOUT
ENERGY RECOVERY AND STEAM GENERATION
OPERATIONS, MAINTENANCE & SUPPORT
PUMP STATION

0 200
Feet

SOURCE: SFPUC; Google Maps, 2016

SFPUC Biosolids Digester Facilities

Figure 6-6
Conceptual Site Plan: SEP South/Quint Street Alternative

SEP digesters and associated control buildings is considered reasonably foreseeable as a result of the proposed project (refer to Chapter 4, Section 4.1, Table 4.1-1, Project 12).

Components

The SEP South/Quint Street Alternative would essentially include all of the same components as the proposed project. Aside from the layout of the facilities, nearly all aspects of the SEP South/Quint Street Alternative would be substantially the same as those of the proposed project, including the footprint of aboveground structures, maximum height, and staging area locations and acreage. The major differences in project components are described below.

Interim Solids Handling Facilities

Construction of the project within SEP South would require demolition of facilities needed to maintain ongoing solids treatment processes throughout the duration of construction. Therefore, this alternative would require construction of interim facilities prior to demolition of these facilities. Interim facilities (e.g., gravity belt thickeners, centrifuge systems, sludge pipelines, biosolids dewatering, cake storage and loadout, etc.) would be required for at least seven years, until construction is completed and the new facilities are fully commissioned. The locations of the sites for these temporary facilities have not yet been identified, but presumably they would be located within or near the SEP boundaries since they need to be in reasonable proximity to existing facilities and treatment processes. One potentially feasible site for interim facilities is the Southeast Greenhouses site. Regardless of their specific location, the interim facilities would include interim odor control systems, which would not be constructed to the same standards and objectives as the proposed permanent odor control system.

For the purposes of this alternative analysis, the interim facilities are assumed to be located at the Southeast Greenhouses site. Under this assumption, with interim facilities located at this site and new permanent facilities constructed on the closed Quint Street site, trucks associated with ongoing SEP operations would need to use Phelps Street for access to Jerrold Avenue during the construction period.

Quint Street

This alternative would require permanently vacating the segment of Quint Street between Jerrold Avenue and the Caltrain right-of-way for construction of both aboveground and underground structures. This differs from the proposed project, under which this same portion of Quint Street would be closed, but no permanent facilities would be constructed here and relocation of underground utilities would not be required. The SEP South/Quint Street Alternative would require relocation of existing utilities under Quint Street, including a 24-inch-diameter high pressure gas line. Relocating existing utilities such as the high pressure gas line would require construction in locations outside of the SEP boundaries.

Facilities Locations

Under this alternative, the digesters would be located at the Asphalt Plant site and on the closed Quint Street segment, placing the digesters closer to the nearest residences (600 feet to Phelps

Street and 700 feet to Oakdale Avenue) compared to the proposed project (1,000 feet). The location of the waste gas burners would also be closer to residences.

Operations and Maintenance

Overall operations and maintenance under the SEP South/Quint Street Alternative would be substantially the same as under the proposed project. However, under this alternative configuration, some of the maintenance facilities would be farther from the processes they would be supporting, and therefore there would be somewhat reduced efficiency in maintenance activities compared to the proposed project.

For the purposes of this alternative analysis, it is assumed that long-term operational grit truck routes would be the same as those identified for the proposed project (refer to Chapter 2, Figure 2-12); chemical delivery, yellow grease loadout, and biosolids truck routes would be the same as the existing route along Jerrold Avenue.

6.3.4.2 Ability to Meet Project Objectives

Because the SEP South/Quint Street Alternative would involve full implementation of the BDFP as proposed, this alternative would meet most of the project objectives (see Table 6-2). However, this alternative would not allow for the timely construction of the BDFP nor maintain rate payer affordability. The reasons for not meeting these objectives relate to the extended schedule and increased costs associated with the interim facilities and relocation of utilities under Quint Street.

This alternative would require that both aboveground structures/facilities (e.g., waste activated sludge thickening, biosolids dewatering, and cake storage and loadout) and underground components (pipe galleries, utility lines, etc.) be relocated in phases to ensure there would be no interruption of solids treatment processes. Relocation of underground pipe galleries and pipelines would be particularly complicated because many of the subsurface areas are congested and there would be minimal room to maneuver given the areas reserved for construction activities. In addition, relocating the 24-inch PG&E high pressure gas pipeline (and other utilities on Quint Street) would further complicate the construction process due to the proximity to residents to the west and potentially the lack of public right-of-way in the vicinity to accommodate these pipelines. With the need for relocating underground utilities, vacating Quint Street, and constructing/operating interim facilities, the overall construction duration and cost are anticipated to be substantially higher than what was identified for the proposed project. The construction schedule would extend at least seven years.

The location where interim facilities would be built has not been identified, but would need to be determined as soon as possible to reduce further schedule extensions beyond the minimum seven years. One possible (though not guaranteed) location would be the Southeast Greenhouses site, due to its proximity to the existing solids handling treatment facilities and the availability of space (although other nearby construction staging areas would need to be identified). While this alternative would be designed to limit noticeable odors of permanent facilities to the SEP property boundary (including locating the proposed digesters as far as possible from residents by placing the digesters in the area along the railroad tracks on the Asphalt Plant site), the interim solids handling facilities may not have as robust odor control systems. This could exacerbate existing odor conditions during the construction period.

While the proposed facilities would be designed to meet the remaining objectives, the proposed site layout would not optimize efficiency of the treatment system or operations and maintenance compared to the proposed project. For example, the orientation of the solids pretreatment facility would not provide the most direct and unencumbered piping pathways to the proposed digesters. In addition, the waste gas burners would be located on the opposite side of the plant from the energy recovery facilities, which, in the event of an emergency that results in breakages of digester gas pipes, could result in excess digester gas that could not be flared, resulting in potential public safety hazards. Lastly, locating one of the maintenance shops away from the main solids treatment facilities would result in less efficiency during operations and maintenance of equipment.

6.3.4.3 Environmental Impacts

Land Use

Similar to the BDFP, construction of the SEP South/Quint Street Alternative would temporarily affect land uses in the vicinity of the SEP but would not physically divide an established community because temporary closure of Jerrold Avenue would separate two areas of similar industrial land use that do not constitute an established community. Operation of the SEP South/Quint Street Alternative, including interim facilities at SEP South and the Southeast Greenhouses site, also would be in areas not currently accessible by the public and would not block access between adjacent land uses, similar to the BDFP. For these reasons, the SEP South/Quint Street Alternative would have a less-than-significant effect on dividing an established community.

Conflicts with land use plans and policies adopted to avoid or mitigate an environmental effect would be reduced compared to the proposed project, because the SEP South/Quint Street Alternative would retain Central Shops Buildings A and B in place, thereby avoiding conflicts with *San Francisco General Plan* policies related to the preservation of historic resources and conflicts with Policy 7 of the Accountable Planning Initiative. However, the SEP South/Quint Street Alternative would have the same policy inconsistencies as the proposed project related to a significant and unavoidable cumulative impact on a historic district. As with the BDFP, the impact related to consistency with land use plans and policies would be considered less than significant under CEQA because policy conflicts in and of themselves do not constitute a significant effect on the physical environment.

Aesthetics

Construction and operation of this alternative would be substantially similar to the proposed project, with construction equipment and permanent facilities similar in character to those typically used at industrial sites in the area. Views of the project site would be substantially blocked by intervening structures and landscaping. Short-range views of the site would be primarily from adjacent public streets, where views would be limited and fleeting, and while the site may be visible in longer-range views from surrounding hills, neither construction nor operations would be expected to substantially affect views from these areas within the context of the overall industrial setting. Even though construction activities would be somewhat closer to Phelps Street compared to the proposed project, this alternative would not substantially degrade the existing visual character of the site or its surroundings or damage scenic resources. The reconfigured site would not block or disrupt scenic vistas or degrade the visual character of the area. Therefore, the SEP South/Quint Street Alternative, alone and in combination with cumulative projects, would not substantially degrade the visual character of the site or surroundings, adversely affect a scenic vista, or damage scenic resources. Thus, these impacts would be less than significant.

Similar to the proposed project, this alternative would be expected to require nighttime illumination, but the SFPUC would implement standard construction measures that require nighttime lighting to be directed away from residential areas and shielded to prevent light spillover effects, and construction impact on light and glare would be less than significant. As with the proposed project, compliance with applicable regulations and policies (California Green Building Code Section 5.106.8 and Planning Commission Resolution 9212) would ensure that light and glare from facilities operation would be less than significant.

Population and Housing, Growth Inducement

Similar to the proposed project, the SEP South/Quint Street Alternative would not displace housing or employment, would not increase treatment capacity at the SEP, and would not extend roads or infrastructure into an undeveloped area. While the construction phase is expected to take about two years longer (for a total of about seven years rather than five), as under the proposed project, it is expected that construction workers would largely be drawn from the local and regional work force and would commute (rather than relocate) to the area. Therefore, the SEP South/Quint Street Alternative would not induce population growth, displace housing units, create substantial demand for additional housing, or displace a substantial number of people, and population and housing and growth inducement impacts would be less than significant.

Cultural Resources

Historical Resources

As Central Shops Buildings A and B and the immediate surrounding area would be preserved, the SEP South/Quint Street Alternative would avoid the significant impact on this historical architectural resource that would occur with their demolition under the proposed project. However, unlike the proposed project, this alternative would include demolition of at least seven structures, including Building 870, identified as contributors to the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. Thus, this alternative would result in the demolition of 31.8 percent of the contributors in the eligible district, the majority of which are associated with the implementation of the 1935 Sewer System Master Plan and continue to provide a good representation of the Streamline Moderne architectural style that characterized the SFPUC's original wastewater facilities. Therefore, the demolition of these buildings would adversely affect the integrity of the historic district. As a result, this alternative would result in a significant impact on historical architectural resources. Mitigation measures available to reduce the severity of the impact include Mitigation Measure M-CR-1 (Documentation of Historic Resources and Interpretive Display). However, as implementation of Mitigation Measure M-CR-1 would not reduce the severity of the impact to a less-than-significant level, the impact would be significant and unavoidable with mitigation.

As with the proposed project under cumulative conditions, the SFPUC would potentially demolish all of the existing digesters and their central control buildings (refer to Chapter 4, Section 4.1, Table 4.1-1, Project 12), which are contributors to the *Southeast Treatment Plant Streamline Moderne Industrial Historic District*. Therefore, as with the proposed project, the SEP South/Quint Street Alternative's contribution to the cumulative adverse impact on this eligible district would be cumulatively considerable, and the cumulative impact would be significant and unavoidable, even with mitigation (Mitigation Measure M-CR-1, Documentation of Historical Resources and Interpretive Display).

Archeological Resources and Human Remains

Like the proposed project, the SEP South/Quint Street Alternative could cause a substantial adverse change in the significance of an archeological resource, but would include substantially more construction due to the additional need for interim facilities. Archeological investigations have identified a National Register-eligible prehistoric archeological site, CA-SFR-171, in the SEP, and potential impacts on archeological resources would be more severe than those of the proposed project because substantially more construction and excavation would occur within the site boundaries of this resource. Potential impacts on human remains would also be similar to those of the proposed project. Older prehistoric sites potentially associated with the pre-bay surface similarly could be affected by either mass excavation or the installation of piles. Additionally, there is a moderate to high potential to encounter historical archeological remains during excavation at the Southeast Greenhouses site where the interim facilities would be constructed.

For these reasons, impacts on archeological resources and human remains at the SEP would be potentially significant. Implementation of Mitigation Measure M-CR-2a (Archeological Testing, Monitoring, and/or Data Recovery) and Mitigation Measure M-CR-2b (Accidental Discovery of Archeological Resources) would reduce impacts on archeological resources and human remains to a less-than-significant level. Therefore, with mitigation, the impact on archeological resources and human remains would be less than significant.

Transportation and Circulation

The SEP South/Quint Street Alternative would rearrange the same facilities as the BDFP within SEP North and SEP South, and the total duration of construction of this alternative would be at least two years longer than that of the proposed project. The SEP South/Quint Street Alternative would also produce more soil requiring disposal as a result of constructing the interim solids handling facilities and the additional utilities location that would be required. Like the proposed project, the SEP South/Quint Street Alternative would include a project-specific construction Traffic Control Plan. Construction of interim facilities would similarly require such a plan. The same peak numbers of construction trucks and construction workers as the proposed project would occur for the SEP South/Quint Street Alternative, although the dates of these peaks would shift. As peak construction traffic (trucks and workers), the temporary closure of Jerrold Avenue, and the Traffic Control Plan would be similar to the proposed project, effects of SEP South/Quint Street Alternative construction on traffic circulation, public transit, bicycle facilities, pedestrian travel, freight rail, parking, and traffic safety would be similar to those identified for the proposed project. While this alternative would vacate Quint Street, the effect on circulation and vehicle miles traveled (VMT) from vacating this street would be inconsequential because Quint Street was permanently closed (effectively vacated) in October 2015, preventing through vehicular and pedestrian traffic from traveling between Newcomb and Jerrold Avenues (as described in Chapter 4, Section 4.6, Transportation and Circulation).

Operations trucks would either use the same routes as existing SEP haul trucks or would use the second entrance/exit to the SEP site via Rankin Street, as described for the proposed project. As the number of haul trucks servicing the SEP South/Quint Street Alternative would be the same as for the proposed project, the SEP South/Quint Street Alternative would similarly result in an insubstantial increase in VMT. For this reason, the transportation and circulation impacts of operation of the SEP South/Quint Street Alternative would be the same as those described for the proposed project.

As with to the proposed project, construction of the SEP South/Quint Street Alternative would overlap with the Headworks Replacement Project, the Central Bayside System Improvement Project, the 1995 Evans/Forensic Services Division and Traffic Control Project, the Pier 70 Project, and the India Basin Mixed Use Development Project. Due to the later construction start date of the SEP South/Quint Street Alternative, construction would not overlap with the Power Feed and Primary Switchgear Upgrades Project, the Seismic Reliability and Conditions Assessment, the Kansas and Marin Streets Sewer Improvements, or the Mission Bay Blocks 29-32 Project; however, the SEP South/Quint Street Alternative could occur concurrently with the Peninsula Corridor Electrification Project, which may require temporary lane or road closures along Jerrold Avenue and Evans Avenue during construction. Similar to the proposed project, the SEP South/Quint Street Alternative would be required to be conducted in accordance with City requirements to ensure that construction activities are conducted safely and with the least possible interference with pedestrians, bicyclists, transit, and vehicles. All cumulative projects would also be required to comply with these requirements. Construction and operational truck trips and routes, construction staging areas, and workers would be the same as proposed for the BDFP (or, in the case of operational truck routes, would include an existing truck route for chemical delivery, yellow grease loadout, and biosolids), but construction-related traffic increases would begin and peak at later times than under the proposed project. While the projects included in the cumulative construction scenario would be somewhat different under this alternative, it is anticipated that cumulative impacts of both construction and operation of the SEP South/Quint Street Alternative would be similar to those identified for the proposed project, and would be less than significant.

Noise and Vibration

Under this alternative, project facilities would still be located generally at the BDFP site, and therefore construction-related noise impacts would be similar to those of the project, as identified in Chapter 4, Section 4.7, Noise and Vibration. As with the proposed project, construction equipment under this alternative would have the potential to generate noise that exceeds the 86 A-weighted decibel (dBA) (at 50 feet) equipment noise limit of Section 2907 of the Police Code. Use of the Southeast Greenhouses staging area could generate noise levels that exceed the City's ambient +10 dBA threshold at the daycare center to the south and some of the closest residential receptors to the east on Phelps Street. Both of these exceedances would be potentially significant, temporary noise impacts, but they would be reduced to less-than-significant levels with implementation of Mitigation Measure M-NO-1a (Shielding of Concrete Saw Operations) and Mitigation Measure M-NO-1b (Construction Noise Control Measures at Southeast Greenhouses Staging Area). In addition, due to the closer proximity to sensitive receptors, this alternative could result in other construction activities—in addition to concrete saws—exceeding the applicable equipment noise limit, and additional mitigation measures, such as construction equipment source and administrative controls, may be required. This alternative would also require more extensive demolition of existing facilities (south of Jerrold Avenue and west of the existing digesters), which could result in a longer construction duration or more equipment being operated on the site at the same time.

Impacts related to construction vibration would be slightly greater than those of the proposed project because demolition and construction activities would occur closer to nearby structures to the east and south. This is a potentially significant impact that would not occur under the proposed project, but feasible vibration control measures are available that would reduce this impact to less than significant.

With respect to operational noise, compared to the proposed project, this alternative would construct the energy recovery facilities slightly farther from the closest residences to the southeast and east, resulting in lower noise levels at these sensitive receptors. At the same time, the waste gas burners, solids pretreatment, and Solids Odor Control Facility (i.e., fans and pumps) would be constructed closer to these same receptors. The noisiest facility would be the Solids Odor Control Facility, at which operational noise levels would exceed the 60-dBA exterior (with windows open) or 45-dBA interior nighttime Section 2909(d) noise limit by as much as 7 dBA, which would be a new potentially significant impact. Since the odor control facilities (primarily fan noise) are mostly outdoors, additional noise mitigation would be required in order to reduce operational noise to below the ordinance limit. Therefore, overall construction-related and operational noise under this alternative would be greater than under the proposed project due to the more extensive demolition required as well as the potential for additional noise impacts caused by facilities being located closer to nearby sensitive receptors.

Compared to the proposed project, this alternative would have the same cumulative construction-related noise and vibration impacts resulting from the proximity to other SFPUC projects proposed at the SEP and their proximity to nearby sensitive receptors. As indicated above, this alternative's contribution to cumulative construction-related noise and vibration impacts would be slightly greater than those of the proposed project, but construction-related cumulative noise impacts under this alternative would be the same as those of the proposed project and the same mitigation measures would be required to reduce the impacts to less than significant.

As described above, this alternative would result in potentially significant operational noise impacts because the Solids Odor Control Facility, the noisiest facility, would be located closer to sensitive receptors to the east and southeast. For the same reasons, unlike the proposed project, this alternative's contribution to cumulative operational noise impacts could be considerable, a potentially significant impact. Further analysis would be needed to determine if feasible measures are available to reduce operational noise levels to less-than-significant levels.

Air Quality

Compared to the proposed project, this alternative would result in higher construction-related criteria pollutant emissions because it would require more construction and truck trips, due to (1) greater demolition at the SEP; (2) relocation of existing infrastructure, including PG&E's 24-inch high pressure line in Quint Street; and (3) construction of interim facilities. Because construction would occur on Quint Street, routes for construction-related trucks and operational trucks (during construction) could be temporarily redirected to Phelps Street for access to the SEP and the Southeast Greenhouses site, increasing proximity of trucks to sensitive receptors to the east of Phelps Street. While the degree of increase cannot be specified, the project's construction-related criteria pollutant emissions could be reduced with implementation of Mitigation Measures M-AQ-1a (Construction Emissions Minimization) and M-AQ-1b (Emission Offsets) if feasible emission offsets were identified; however, as with the proposed project and due to the uncertain feasibility of implementing adequate emission offsets, this impact would be considered significant and unavoidable with mitigation. Additionally, there would be short-term increases in criteria air pollutants due to operation of interim facilities at the Southeast Greenhouses site.

Construction-related health risks could be greater under this alternative than under the proposed project. There would be increased health risks associated with closer proximity of construction equipment and trucks to sensitive receptors as well as increased TAC emissions (mostly as diesel particulate matter) from additional demolition activities and additional construction activities associated with interim facilities. Operationally, development of interim facilities and location of the waste gas burners substantially closer to the nearest sensitive receptors, while locating energy recovery facilities only slightly farther from these receptors under this alternative, could result in a net increase in operational health risks when compared to the proposed project, a potentially significant impact. This impact likely could be reduced with implementation of mitigation (e.g. additional emissions controls).

Even though there would be greater construction-related emissions under this alternative, conflicts with the Clean Air Plan would be the same as those of the proposed project, and this potentially significant impact would be less than significant with mitigation.

This alternative's contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than that of the proposed project due to more extensive demolition at the SEP, and as with the proposed project, this impact would be significant and unavoidable, even with implementation of mitigation measures like Mitigation Measures M-AQ-1a and M-AQ-1b. Cumulative effects on health risks would be greater than those of the proposed project due to location of waste gas burners closer to the nearest sensitive receptors, and would be a potentially significant impact, compared to a less-than-significant impact for the proposed project; however, this impact would be less than significant with mitigation.

Greenhouse Gas Emissions

This alternative would have the same energy capture potential (from digester gas produced) and the same increase in biosolids reuse opportunities as the project, and would be subject to the same local regulations adopted to reduce GHG emissions. Energy produced by digester gas facilities under the SEP South/Quint Street Alternative would be the same as the energy produced under the project and, as with the proposed project, the energy produced would be used to power proposed solids handling facilities, with excess energy used by other facilities at the SEP. Other SEP facilities not served by the energy recovery facilities would remain reliant upon Hetch Hetchy power. Overall, this alternative is still expected to have a less-than-significant effect on GHG emissions.

Wind and Shadow

Wind

The SEP South/Quint Street Alternative would construct the BDFP facilities in areas that would affect the same publicly accessible areas as those identified for the proposed project (Jerrold Avenue). The SEP South/Quint Street Alternative site does not contain any areas subject to wind comfort or wind hazard criteria established in the San Francisco Planning Code. As with the proposed project, winds in the area are typically from the west/southwest and wind speeds are light. The orientations and profiles of the new facilities would be different from those of the proposed project. For purposes of this analysis, it is assumed that the facility/structure heights and massing would be the same as described for the proposed project. In the SEP South/Quint Street Alternative, the buildings nearest Jerrold Avenue would be the energy recovery and digester gas treatment facilities, Maintenance Shops 2, solids pretreatment and THP, biogas storage, and digestion. The largest new structure adjacent to Jerrold Avenue would be the Solids Pretreatment Facility, approximately 34,200 square feet in area and 65 feet tall. As described in Chapter 4, Section 4.10, Wind and Shadow, the tallest BDFP structures would exceed the height of existing structures within the project site but would be similar in height to some existing buildings at the SEP and to neighboring buildings that would remain. The SEP South/Quint Street Alternative structures would not be substantially taller than adjacent or nearby buildings and structures. Due to the predominant wind patterns, buildings and structures to the southwest of Jerrold Avenue (including the Solids Pretreatment Facility) would intercept wind but would not direct it to publicly accessible areas. While the energy recovery and digester gas treatment facilities would increase the slab-shaped massing facing the predominant wind direction on the northeastern side of Jerrold Avenue, potentially affecting winds at pedestrian level, the maximum height of the structure would be 65 feet, a height that is generally considered too low to result in substantial ground-level wind effects. For this reason, the SEP South/Quint Street

Alternative would not contribute to wind pattern alteration that would substantially affect public areas, and would have a less-than-significant impact.

Shadow

As noted above, the SEP South/Quint Street Alternative would construct facilities in areas that would affect the same publicly accessible areas as those identified for the proposed project (Jerrold Avenue). The SEP South/Quint Street Alternative would not cast new shadow on Palou & Phelps Mini Park or Youngblood Coleman Playground, the nearest San Francisco Recreation and Parks Department (SFRPD) properties, or any other SFRPD properties. As with the proposed project, full buildout of the SEP South/Quint Street Alternative would cast shade on Jerrold Avenue; however, this shadow would be transitory, would not affect the function of the sidewalks, and would not exceed levels commonly expected in urban areas. For these reasons, the SEP South/Quint Street Alternative would not create new shadow that would substantially affect public open spaces, and would have a less-than-significant impact.

Recreation

Similar to the proposed project, the SEP South/Quint Street Alternative would not directly affect recreational facilities because there are no such facilities within the SEP South/Quint Street Alternative site or off-site staging areas. The SEP South/Quint Street Alternative does not include new recreational facilities and would not permanently affect existing recreational resources, and does not include new residential or other uses that would generate increased demand for parks or other recreational facilities. The SEP South/Quint Street Alternative would thus have no impact related to direct or indirect physical deterioration of recreational resources.

Utilities and Service Systems

The BDFP facilities constructed under the SEP South/Quint Street Alternative would produce the same amount of wastewater, stormwater, biosolids, and solid waste as the proposed project and would require the same amount of potable water. While Central Shop Buildings A and B would not be demolished under this alternative, more building debris would require disposal because 30 structures in SEP South would be demolished to accommodate the BDFP facilities. The SEP South/Quint Street Alternative would also produce more soil requiring disposal, as a result of constructing the interim solids handling facilities and the additional utilities location that would be required. As with the proposed project, compliance with applicable regulatory requirements would ensure that the SEP South/Quint Street Alternative would not result in any impacts with respect to utilities or service systems. All cumulative development in San Francisco would be subject to the same regulatory framework, and compliance with these existing regulations would serve to avoid any significant cumulative impacts. Therefore, all impacts related to utilities and service systems would be less than significant, as with the proposed project, and no mitigation would be required.

Public Services

Compared to the proposed project, the SEP South/Quint Street Alternative would require a similarly sized work force, which is expected to be drawn from the local and regional work force and would commute (rather than relocate) to the area. For this reason, the SEP South/Quint Street Alternative is not expected to result in increased response times such that new or physically altered facilities would be required to maintain public services, despite the extended duration of construction under the SEP South/Quint Street Alternative. As with the proposed project, any incremental increase in demand for law enforcement, fire protection, or emergency medical services during construction would be temporary, could be accommodated by existing services, and would not require construction of new or physically altered facilities to maintain service. Thus, impacts would be less than significant.

As with the proposed project, operations of the SEP South/Quint Street Alternative would not require new or physically altered public service facilities because this alternative similarly would not construct residences or increase the number of employees at the SEP. For this reason, operation of the SEP South/Quint Street Alternative would have no impact on public services.

Biological Resources

Potential impacts on biological resources— including impacts on nesting birds and roosting bats as a result of building demolition, construction, and site preparation—would be the same under this alternative as under the proposed project.

Disturbances to bats potentially roosting in underutilized industrial buildings or trees could occur from construction-associated noise or vibration, or increased human activity in the area. Increased lights or the construction of large structures can lead to the disturbance of roosting bats, which also may lead to behavioral alterations. Similarly, nesting birds could be affected by construction activities that generate noise and visual disturbance. Construction activities that may alter the ambient noise environment or introduce short-term loud noise events include but are not limited to building demolition and grading or ground disturbance. Noise pollution can be detrimental to wildlife, and bird populations are particularly susceptible because they rely on acoustic signals for mating, predator evasion, and communication between adults and offspring, among other behaviors.

Absent more specific information regarding the extent of demolition and construction under the SEP South/Quint Street Alternative, this analysis conservatively assumes that any trees within or near the footprint of the SEP South/Quint Street Alternative would be removed or damaged, with damage such as mechanical damage to tree trunks and canopies, root damage resulting from grading and excavation activities, and root damage resulting from soil compaction. However, these trees would be protected through implementation of the Tree Protection Plan described in Chapter 2, Section 2.6.5.5, Tree Removal and Protection Plan, which would be submitted to SFPW. The commitment to tree replacement and protection would conform with Article 16 of the Public Works Code.

Nesting birds, roosting bats, and street trees potentially affected by the implementation of the SEP South/Quint Street Alternative would be subject to the same standard construction measures and regulatory conditions as identified for the project. As with the proposed project, implementation of SFPUC's Standard Construction Measure 7 would reduce impacts to nesting birds to less than significant. Implementation of Mitigation Measure M-BI-1 (Protective Measures for Special Status Bats and Maternity Roosts) would reduce potentially significant impacts on roosting bats within or near the footprint of the SEP South/Quint Street Alternative to a less-than-significant level. Therefore, with the above mitigation, impacts on biological resources would be less than significant.

Geology, Soils, and Paleontological Resources

The BDFP facilities constructed under the SEP South/Quint Street Alternative would be identical to those constructed under the proposed project, except that interim solids handling facilities would also be constructed. The amount of earthwork under this alternative would be greater because of construction of the interim biosolids handling facilities and the additional utilities relocation that would be required for this alternative. However, impacts related to soil erosion would remain less than significant with implementation of the requirements of Article 4.1 of the San Francisco Public Works Code and the SWRCB General Construction Stormwater NPDES Permit. As with the proposed project, excavations conducted during construction would be shored in accordance with applicable regulations. Monitoring would be conducted during dewatering and pile driving, and corrective actions would be implemented if necessary to ensure that settlement would remain within acceptable levels. All new facilities would be constructed in accordance with the San Francisco Building Code, the SFPUC's General Seismic Safety Requirements, and applicable engineering design standards, which would ensure that the structures could withstand seismic hazards including ground shaking and seismically induced ground failures such as liquefaction.

Under the SEP South/Quint Street Alternative, the depths of excavation would be the same as under the proposed project, and therefore the excavations under this alternative would also extend into the Pleistocene-aged upper layered sediments, which have a high paleontological sensitivity. However, as with the proposed project, implementation of Mitigation Measure M-GE-4 (Paleontological Resources Monitoring and Mitigation Program) would reduce this potentially significant impact to a less-than-significant level.

For the reasons stated above, as with the proposed project, all impacts related to geology, soils, seismicity, and paleontology would be less than significant with implementation of the mitigation measures required for the project.

Hydrology and Water Quality

The facilities constructed under the SEP South/Quint Street Alternative would produce the same amount of wastewater and stormwater as the proposed project, and there would be no change in the composition of the wastewater. The amount of earthwork and construction-related groundwater dewatering under the SEP South/Quint Street Alternative would be greater because of construction of the interim biosolids handling facilities and the additional utilities relocation that would be required under this alternative. However, impacts related to degradation of water quality would remain less than significant with implementation of City requirements (i.e., Articles 4.1 and 4.2 of the San Francisco Public Works Code and the SWRCB General Construction Stormwater NPDES Permit).

While the project includes construction of some facilities in a future flood zone (due to sea level rise), none of the facilities constructed under the SEP South/Quint Street Alternative would be constructed in such a zone. As with the proposed project, none of the facilities would be constructed within a potential tsunami inundation zone.

For the reasons stated above, as with the proposed project, all impacts related to hydrology and water quality would be less than significant and no mitigation would be required.

Hazards and Hazardous Materials

The BDFP facilities constructed under the SEP South/Quint Street Alternative would be identical to those constructed under the proposed project, except that interim solids handling facilities would also be constructed and additional utilities would require relocation. Under the SEP South/Quint Street Alternative, the BDPF facilities would use the same hazardous materials and would generate the same volume of biogas as would the proposed project. The increased soil excavation conducted under the SEP South/Quint Street Alternative for construction of the interim biosolids facilities and relocation of additional utilities would increase the potential for encountering hazardous materials in the soil and groundwater. However, as with the proposed project, the assessment and management of site risks related to construction would be ensured through compliance with the Maher Ordinance, Article 22A of the San Francisco Health Code and the California Air Resources Board Asbestos Air Toxics Control Measure. While Central Shops Buildings A and B would not be demolished under the SEP South/Quint Street Alternative, more hazardous building materials would require abatement and disposal under this alternative because 30 structures in SEP South would be demolished to accommodate the BDFP facilities. However, impacts related to hazardous building materials would be less than significant with compliance of existing regulations, including BAAQMD Rule 11, Regulation 2; Section 3426 of the San Francisco Building Code; the Lead in Construction Standard; and California Universal Waste Regulations. Similarly, impacts related to interference with emergency response during construction would be minimized through implementation of a Traffic Control Plan. Fire risks would be minimized through compliance with existing fire safety codes and industry standards.

For the reasons stated above, as with the proposed project, all impacts related to hazards and hazardous materials would be less than significant.

Mineral and Energy Resources

Similar to the proposed project, this alternative would have no impact on mineral resources because the SEP and construction staging areas do not contain substantial mineral resources or locally important mineral resource recovery sites.

Construction energy needs would be slightly higher than those of the project, given that this alternative would include the construction of interim facilities. However, this energy consumption would not be considered a wasteful use of energy, for similar reasons as those explained for the project (similar construction equipment meeting local efficiency standards would be used, and the same regulations regarding recycling and water use would apply); thus, this impact would be less than significant. Energy produced by biogas facilities under the SEP

South/Quint Street Alternative would be similar to the energy produced under the project and similarly would be available to SEP facilities. The impact of operation of the SEP South/Quint Street Alternative on energy, fuel, and water use would be less than significant. Cumulative impacts of this alternative would be less than significant, similar to those identified for the project. Similar to the proposed project, this alternative would reduce the amount of power needed from Hetch Hetchy and would not encourage activities that would result in the use of large amounts of these resources, or result in their use in a wasteful manner.

Agriculture and Forest Resources

Like the proposed project, the SEP South/Quint Street Alternative would not affect any land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, nor would it affect any land zoned or used for either agricultural or forestry use. Therefore, there would be no impact related to agriculture or forest resources.

6.4 Alternatives Comparison and the Environmentally Superior Alternative

The CEQA Guidelines require the identification of an environmentally superior alternative to the proposed project (Section 15126.6[e]). If it is determined that the "no project" alternative would be the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other project alternatives (Section 15126.6[3]).

Table 6-3 compares the significant impacts of the proposed project with those of Alternatives A (No Project), B (Pier 94 Backlands), C (Historical Resources Relocation), and D (SEP South/Quint Street). The table also lists impacts that would be less than significant for the proposed project but would be significant or potentially significant under one or more of the alternatives, indicating that in a few cases, an alternative would result in a significant impact that would not occur under the proposed project. Impacts not listed in this table would be less than significant (or no impact) for the proposed project and for all alternatives.

As indicated in Table 6-3, the significant and unavoidable impact on historical resources associated with the demolition of Central Shops Buildings A and B identified for the proposed project would be avoided or substantially reduced under all alternatives. However, the significant and unavoidable cumulative impact on the eligible *Southeast Treatment Plant Streamline Moderne Industrial Historic District* under the proposed project would remain significant and unavoidable under Alternatives B, C, and D (but not under Alternative A, the No Project Alternative), and this impact would be the same or more severe for these alternatives compared to the proposed project. The significant and unavoidable air quality impacts related to construction emissions of criteria air pollutants identified for the project would remain under Alternatives B, C, and D and would be more severe under these alternatives. Therefore, there is no clear distinction among Alternatives B, C, and D regarding their ability to avoid or substantially reduce the significant and unavoidable impacts of the proposed project.

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TABLE 6-3
COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO IMPACTS OF ALTERNATIVES

Environmental Resource	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Cultural Resources	**Impact CR-1:** The project would cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code. (SUM)	No impact.	No impact on Central Shops Buildings A and B because they would be retained in place. However, potential impacts on other potentially eligible historic structures along the pipeline route would occur. (LSM)	Impact reduced because Central Shops Buildings A and B would be relocated and rehabilitated consistent with Secretary of the Interior's Standards. (LS)	Impact would be significant and avoidable with mitigation because, although Central Shops Buildings A and B would be retained in place, at least seven structures that are contributors to the historic district would be demolished, which would not occur under the project. (SUM)
	Impact CR-2: The project could cause a substantial adverse change in the significance of an archeological resource. (LSM)	No impact.[a]	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project, at both the SEP and Pier 90 site. (LSM)	Impact and mitigation would be similar to the project. (LSM)
	Impact CR-3: The project could disturb human remains, including those interred outside of formal cemeteries. (LSM)	No impact.[a]	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project, at both the SEP and Pier 90 site. (LSM).	Impact and mitigation would be similar to the project. (LSM)
	Impact C-CR-1: The project, in combination with past, present, and future projects, would substantially contribute to cumulative adverse historic architectural resources impacts. (SUM)	No impact.	Impact reduced because Central Shops Buildings A and B would be retained; however, this alternative would allow for future demolition of the existing digesters (part of the historic district), and thus the impact on the historic district and archeological resources, and associated mitigation, would be similar to the project. (SUM)	Impact reduced because Central Shops Buildings A and B would be relocated and rehabilitated; however, this alternative would allow for future demolition of the existing digesters (part of the historic district), and thus the impact on the historic district and archeological resources, and associated mitigation, would be similar to the project. (SUM)	Impact on Central Shops Buildings A and B would be avoided because these structures would be retained in place; however, Alternative D would demolish seven other structures that are contributors to the historic district. Alternative D would also allow for future demolition of the existing digesters (part of the historic district), and thus the impact on the historic district and archeological resources, and associated mitigation, would be similar to the project. (SUM)
Noise and Vibration	**Impact NO-1:** Use of concrete saws during construction of the project could cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project and could expose people to or generate noise levels in excess of standards in the Noise Ordinance and when the Southeast Greenhouses staging area would be used, construction activities would exceed significance thresholds at nearby sensitive receptors. (LSM)	Construction noise impacts would be less than those of the project, but would still be significant because some ongoing repair activities, such as repair of existing digesters, would be closer to the nearest residences to the east. Similar mitigation would be required. (LS or LSM)	Construction noise impacts would be significant because construction activities could disrupt classroom activities at City College of San Francisco's Evans Campus, but overall, construction-related noise increases would be less than those of the project because fewer sensitive receptors would be affected by construction noise and they would be subject to temporary noise increases for a much shorter duration. Additional mitigation would be required to address pipeline construction noise, but less mitigation would be required for construction activities at the Pier 94 Backlands site (Construction noise impacts at sensitive receptors near the Southeast Greenhouses staging area would be avoided, and less than significant). (LSM)	This impact would be greater because this alternative would result in construction noise increases at an off-site location that would occur in addition to noise at the SEP. Overall, however, construction noise impacts on sensitive receptors would be the same as those of the project since there are no sensitive receptors located in proximity to the Pier 90 site. Similar mitigation would be required. (LSM)	Construction noise impacts would be greater than those of the project because this alternative would involve more demolition activities closer to sensitive receptors and because siting interim facilities at the Southeast Greenhouses site would create greater construction-related and operational noise impacts. Additional mitigation would be required. (LSM)
	Impact NO-2: Construction of the project would not expose structures or persons to excessive groundborne vibration levels. (LS)	Vibration impacts could be less under this alternative if ongoing repair activities were to involve less intensive construction activities and pile driving activities were either reduced or avoided altogether. However, these activities could be closer to sensitive receptors to the east and construction-related vibration levels could exceed thresholds for human annoyance. Mitigation would be required. (LSM)	Potential vibration impacts on adjacent historic structures at the SEP would be avoided under this alternative. With the additional pipeline construction required, however, the likelihood of vibration impacts would be greater than under the proposed project. This alternative could pose new vibration impacts if sheet pile driving techniques were employed for pipeline construction near existing development, but this impact could be mitigated to less than significant with feasible measures (avoidable with alternative construction techniques). (LSM)	Impact would be the same as that of the project. (LS)	Impacts and mitigation would be the slightly greater than those of the project because demolition and construction activities would occur closer to nearby structures to the east and south. (LSM)

TABLE 6-3 (Continued)
COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO IMPACTS OF ALTERNATIVES

Environmental Resource	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Noise and Vibration (cont.)	**Impact NO-3**: Operation of the project would not result in a substantial permanent increase in ambient noise levels in the project vicinity and permanently expose persons to noise levels in excess of standards in the Noise Ordinance (Article 29 of the Police Code). (LS)	As with the proposed project, there would be no new significant operational impacts under this alternative. (No Impact)	As with the proposed project, there would be no new significant operational impacts under this alternative; there would be fewer sensitive receptors that could be affected by operational noise. (LS)	As with the proposed project, there would be no new significant operational impacts under this alternative since there would be no sensitive receptors in proximity to the new off-site facilities. (LS)	This alternative would create new significant noise impacts associated with construction and operation of interim facilities at the Southeast Greenhouses site, which is closer to receptors to the east and south than the project. In addition, under this alternative the noisiest facility, the Solids Odor Control Facility, would be located closer to sensitive receptors to the east and southeast, and operational noise increases could exceed ordinance limits. (LSM or SUM)
	Impact C-NO-1: Construction activities of the project combined with cumulative construction noise in the project vicinity would cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity or result in excessive groundborne vibration levels during construction. (LSM)	Noise generated by repair activities[a] at the SEP could contribute to cumulative construction-related noise increases at the SEP if they overlap with other planned construction projects at the SEP. (LSM)	Cumulative construction-related noise impacts would be less due to absence of sensitive receptors in the Pier 94 Backlands vicinity. (LS)	Cumulative construction noise impacts and mitigation would be similar to the project since project facilities would still be located at the BDFP site. (LSM) There are no sensitive receptors in proximity to the Pier 90 site, so cumulative impacts would be less than significant at this site.	This alternative's contribution to cumulative noise impacts would be greater than that of the project since construction would be more extensive at the SEP site and closer to sensitive receptors (including construction and operation of interim facilities at the Southeast Greenhouses site. (LSM)
	Impact C-NO-2: Operation of the project when considered with other cumulative development would not cause a substantial permanent increase in ambient noise levels or result in excessive vibration in the project vicinity. (LS)	No impact.	Similar to the project. (LS)	Similar to the project. (LS)	Under this alternative, the noisiest facility, the Solids Odor Control Facility, would be located closer to sensitive receptors to the east and southeast, and operational noise increases could result in cumulatively considerable contribution to operational noise impacts. (LSM or SUM)
Air Quality	**Impact AQ-1:** The project's construction activities would not generate fugitive dust that could violate an air quality standard or contribute substantially to an existing or projected air quality violation, but project construction would generate criteria air pollutants that would violate an air quality standard and contribute substantially to an existing or projected air quality violation, and result in a cumulatively considerable net increase in criteria air pollutants. (SUM)	Less than the proposed project, but the impact would not be completely avoided due to construction-related air pollutant emissions associated with ongoing repair activities of existing facilities. (LS or LSM)	Construction-related criteria pollutant emissions would be greater overall because of the added pipeline construction, which would not be offset by reduced demolition at the BDFP site. (SUM)	Construction of this alternative would generate the same criteria pollutant emissions as the project, plus additional emissions resulting from relocation and rehabilitation of the Central Shops buildings and dismantling or demolition of buildings at Pier 90 site. (SUM)	Construction-related criteria pollutant emissions would be greater than those of the proposed project due to increased demolition, construction/operation of interim facilities, increased truck operations, and increased grading/excavation associated with relocation of existing infrastructure. (SUM)
	Impact AQ-3: Construction and operation of the project would generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial air pollutant concentrations or result in a cumulatively considerable net increase in health risks or hazards. (LS)	Less than the proposed project but impact would not be completely avoided because there would still be construction-related air pollutant emissions associated with ongoing repair activities of existing facilities. (LS)	Net increase in construction related emissions and TACs, however health risks could be less overall because the closest sensitive receptors are farther away (1,800 feet) compared to the project (1,000 feet), and because there are few to no sensitive receptors located downwind of the Pier 94 Backlands site. (LS)	Impact would be similar to the proposed project. (LS)	Construction and operational health risks could be greater than those of the project due to closer proximity of construction and trucks to sensitive receptors, increased TAC emissions from demolition activities and construction/demolition of interim facilities. Operational health risks could be greater because waste gas burners would be substantially closer to the nearest sensitive receptors. (LSM)
	Impact AQ-4: The project's construction-related air pollutant emissions could conflict with, or obstruct implementation of, the *2010 Clean Air Plan*. (LSM)	While this alternative would reduce the project's conflicts with the Clean Air Plan associated with construction-related emissions, this alternative would not be consistent with the Clean Air Plan's Policy ECM 2, Renewable Energy. In addition, it would result in higher future operational emissions of ozone precursors (ROG and NOx) than the proposed project. (LSM)	Although there would be greater construction-related emissions under this alternative, conflicts with the Clean Air Plan would be the same as those of the project. (LSM)	Although there would be greater construction-related emissions under this alternative, conflicts with the Clean Air Plan would be the same as those of the project. (LSM)	Although there would be greater construction-related emissions under this alternative, conflicts with the Clean Air Plan would be the same as those of the project. (LSM)

TABLE 6-3 (Continued)
COMPARISON OF ENVIRONMENTAL IMPACTS OF PROJECT TO IMPACTS OF ALTERNATIVES

Environmental Resource	Proposed Project	Alternative A: No Project	Alternative B: Pier 94 Backlands	Alternative C: Historical Resources Relocation	Alternative D: SEP South/Quint Street
Air Quality (cont.)	**Impact C-AQ-1a:** Construction of the project, in combination with other past, present, and probable future projects, would result in a cumulatively considerable net increase in criteria air pollutants and contribute to cumulative regional air quality impacts. (SUM)	Less than the proposed project but impact would not be completely avoided because repair activities, such as repair of existing digesters, would contribute to cumulative increases in construction-related criteria pollutant emissions. (LS)	This alternative's contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than the proposed project due to the added pipeline construction. (SUM)	This alternative's contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than the proposed project due to the added emissions associated with Central Shops relocation and rehabilitation as well as dismantling or demolition of buildings at the Pier 90 site. (SUM)	This alternative's contribution to significant and unavoidable cumulative construction-related NOx emissions would be greater than the proposed project due to more extensive demolition at the SEP. (SUM)
	Impact C-AQ-2: Construction and operation of the project, in combination with other past, present, and probable future projects, could generate toxic air contaminants, including diesel particulate matter, but would not expose sensitive receptors to substantial air pollutant concentrations or result in a cumulatively considerable net increase in health risks and hazards. (LS)	Less than the project, but the impact is not avoided because repair activities, such as repair of existing digesters, would contribute to cumulative increases in construction-related toxic air contaminant emissions. (LS)	Although there would be a net increase in construction-related contaminant emissions and TACs, cumulative health risks and hazards would decrease because the closest sensitive receptors would be farther away (1,800 feet) compared to the project and because downwind receptors are absent with respect to the Pier 94 Backlands site. (LS)	Impact would be similar to that of the project. (LS)	Slight net increase in health risks due to relocation of waste gas burners closer to nearest sensitive receptors, but the impact would be less than significant with mitigation. (LSM)
Greenhouse Gas Emissions	**Impact C-GG-1:** The project would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. (LS)	Unlike the project, this alternative would conflict with adopted policies intended to reduce statewide GHG emissions because it would not make use of the energy production potential of increasing biogas emissions, would not reduce non-biogenic GHG emissions, and would not improve biosolids reuse opportunities, though feasible measures are available to reduce this impact to less than significant. (LSM)	This alternative would have the same energy capture potential (from biogas produced) and the same increase in biosolids reuse opportunities as the project. However, unlike in the project, the energy recovery facilities located at the Pier 94 Backlands site would not be available as backup power to the main plant or to support other SEP facilities. (LS)	Impact would be similar to that of the project. (LS)	Impact would be similar to that of the project. (LS)
Biological Resources	**Impact BI-1:** Project construction could have a substantial adverse effect, either directly or through habitat modifications, on roosting bats, which are protected by the California Department of Fish and Wildlife. (LSM)	No impact.[a]	Impacts on bats would be avoided. (LS)	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project. (LSM)
	Impact C-BI-1: The project, in combination with past, present, and probably future projects, could substantially contribute to cumulative impacts on biological resources (roosting bats). (LSM)	No impact.[a]	Impacts on bats would be avoided. (LS)	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project. (LSM)
Geology, Soils, and Paleontological Resources	**Impact GE-4:** The project could directly or indirectly destroy a unique paleontological resource. (LSM)	No impact.[a]	Impact would be reduced to less than significant due to low potential for paleontological resources. (LS)	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project. (LSM)
	Impact C-GE-2: The project, in combination with past, present, and probable future projects, could substantially contribute to cumulative impacts on paleontological resources. (LSM)	No impact.[a]	Impact would be reduced to less than significant due to low potential for paleontological resources. (LS)	Impact and mitigation would be similar to the project. (LSM)	Impact and mitigation would be similar to the project. (LSM)
Mineral and Energy Resources	**Impact ME-2:** Operation of the project would not result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner. (LS)	Unlike the proposed project, this alternative would result in a potentially significant impact because more frequent routine flaring of digester gas would be a wasteful use of a local energy resource, but feasible measures are available to reduce this impact to less than significant. (LSM)	Impact would be similar to the project. (LS)	Impact would be similar to the project. (LS)	Impact would be similar to the project. (LS)

NOTES:

[a] As described in Section 6.3.1, under the No Project Alternative, the SFPUC would need to implement a much higher level of maintenance, as well as increased levels of equipment/facility repair and replacement, compared to existing conditions. With a higher risk of upset, there could also be emergency repairs or replacements needed. Construction of such projects could adversely affect archeological resources or human remains, and could create impacts related to noise, air pollutant emissions, and transportation.

LS = Less than Significant
LSM = Less than Significant with Mitigation
SUM = Significant and Unavoidable with Mitigation
SU = Significant and Unavoidable
BDFP = Biosolids Digester Facilities Project
GHG = greenhouse gas
NOx = nitrogen oxides
ROG = reactive organic gases
SEP = Southeast Water Pollution Control Plant
TAC = toxic air contaminant

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The identification of the environmentally superior alternative is based on the relative severity of the various significant impacts. For the purposes of this analysis, the relative severity of a significant impact considers multiple factors, including the areal extent, magnitude, duration, and frequency of the impact as well as proximity to and number of sensitive receptors.

The No Project Alternative would avoid all construction and operational impacts that were identified for the proposed project under "normal" conditions. However, due to the age and condition of the existing facilities, likely future scenarios include breakdowns and equipment failures, even with an increased level of maintenance. Under scenarios of breakdowns and equipment failures, there would be potential for a wide range of impacts, depending on the nature and extent of those breakdowns. Due to the increased level of repairs and replacement and the inevitable construction associated with those repairs/replacement, the No Project Alternative would likely result in physical environmental impacts associated with archeological resources, transportation/circulation, noise, vibration, air quality, biological resources, and paleontological resources. However, depending on the circumstances under which the repairs/replacement would occur, implementation of the mitigation measures identified in this EIR for the significant construction-related impacts of the proposed project may or may not be required; this could result in more severe impacts than those identified for the proposed project. Furthermore, because the No Project Alternative would not make use of the energy production potential of increased digester gas production (a result of planned population growth), it would conflict with policies adopted for the purpose of reducing GHG emissions and it would be a wasteful use of a local energy resource. These would be considered potentially significant impacts associated with GHG emissions and energy resources that would not occur under the proposed project, although feasible mitigation is available that could reduce these impacts to less than significant. Nevertheless, in consideration of the likelihood of persistent and prolonged environmental impacts associated with ongoing and unplanned construction activities for repairs and replacement, the No Project Alternative is not the environmentally superior alternative.

The SEP South/Quint Street Alternative would result in some impacts that are more severe and some significant impacts that would not occur under the proposed project. Even though Central Shops Buildings A and B would be retained in place, at least seven structures that are contributors to the historic district would be demolished, a significant and unavoidable impact that would not occur at the project level under the proposed project (but was identified as a cumulative impact). In addition, due to the closer proximity of sensitive receptors, health risk impacts associated with exposure to TACs would be greater than those under the proposed project, a potentially significant impact. Increased exposure to TACs due to closer proximity to sensitive receptors would occur during construction (due to construction equipment and trucks) as well as during operations (due to waste gas burners). Under this alternative, the noisiest facility, the Solids Odor Control Facility (mostly outdoors), would be located closer to sensitive receptors to the east and southeast, and operational noise increases could exceed ordinance limits, another significant direct and cumulative impact. Furthermore, the SEP South/Quint Street Alternative would add at least two years to the proposed project's five-year construction schedule, for a total of seven years. This extended construction period would extend the duration of all construction-related impacts, and specifically, air pollutant emissions, noise, and transportation impacts in the project vicinity, which, as stated above, would occur closer to sensitive receptors, further exacerbating these impacts. Overall, although Central Shops Buildings A and B would be retained in place, avoiding a significant and unavoidable impact, the SEP South/Quint Street Alternative would result in more severe environmental impacts than the proposed project. Therefore, the SEP South/Quint Street Alternative is not the environmentally superior alternative.

The remaining two alternatives—the Pier 94 Backlands and Historical Resources Relocation Alternatives—would both provide environmental trade-offs compared to the proposed project. Both alternatives would avoid or substantially reduce at least one significant impact of the proposed project, but both alternatives would also result in additional environmental impacts, including impacts at different locations, that would not occur under the proposed project.

The Pier 94 Backlands Alternative would avoid and substantially reduce all impacts at the BDFP site, but overall construction and operational impacts at the Pier 94 Backlands site would be comparable to those identified for the proposed project, only at a different location. This alternative would also result in construction impacts associated with the 4,000 feet of pipelines between the Pier 94 Backlands site and the SEP that would not occur under the proposed project and would affect the sensitive receptors located along the pipeline alignment that would not be affected under the proposed project (including City College campus). However, some impacts at the Pier 94 Backlands site (e.g., noise and health risk) would be less severe than what would occur under the proposed project, because of the greater distance to sensitive receptors. This alternative would avoid the cumulative construction noise impact that would occur under the proposed project. The same mitigation measures identified for the project would be required except for Mitigation Measures M-CR-1 (Documentation of Historical Resources and Interpretive Display), M-NO-1b (Construction Noise Control Measures at Southeast Greenhouses Staging Area), M-BI-1 (Protective Measures for Special Status Bats and Maternity Roosts), and M-GE-4 (Paleontological Resources Monitoring and Mitigation Program). In addition, many mitigation measures similar to those recommended for the proposed project and/or additional new mitigation measures (for construction noise) would be necessary along the 4,000-foot corridor for the pipeline construction. The overall construction schedule would be about the same as that of the proposed project (five years), but the overall area of surface disturbance for the Pier 94 Backlands Alternative would be about 15 acres plus the 4,000-foot pipeline corridor, which could disturb an additional 5 to 10 acres, depending on the width of the construction corridor. This would be a substantially greater area of disturbance than that of the project (about 10 acres).

Similarly, **the Historical Resources Relocation Alternative** would involve trade-offs. This alternative would avoid the significant and unavoidable impact associated with demolition of Central Shops Buildings A and B that would occur under the proposed project, but it would otherwise have all the same impacts as those identified for the proposed project *plus* it would result in construction and operational impacts at the off-site location where the Central Shops buildings would be relocated (assumed to be Pier 90). With the exception of Mitigation Measure M-CR-1 (Documentation of Historical Resources and Interpretive Display), all of the mitigation measures identified for the proposed project would be required for this alternative, and additional mitigation measures could be required at the relocation site. The overall construction schedule would be slightly longer than that for the proposed project, adding up to about one year, but the overall area of surface disturbance would be the same as for the proposed project (about 10 acres) plus about 3 acres for the relocation site. Assuming that the relocation site would be at Pier 90 (or a similar location with light industrial land use), this alternative would not substantially affect any additional sensitive receptors.

In summary, either the Pier 94 Backlands Alternative or the Historical Resources Relocation Alternative would be considered environmentally superior to the proposed project because either would avoid the proposed project's significant and unavoidable impact on historical resources associated with the demolition of Central Shops Buildings A and B. However, on balance, the Historical Resources Relocation Alternative would have a slight environmental advantage over the Pier 94 Backlands Alternative as the environmentally superior alternative. This is mainly because, although operational impacts would be substantially the same for these two alternatives, the construction impacts under the Pier 94 Backlands Alternative would have a substantially greater area of disturbance and affect more sensitive resources along the 4,000-foot pipeline corridor between the SEP and Pier 94 compared to the construction impacts of the Historical Resources Relocation Alternative.

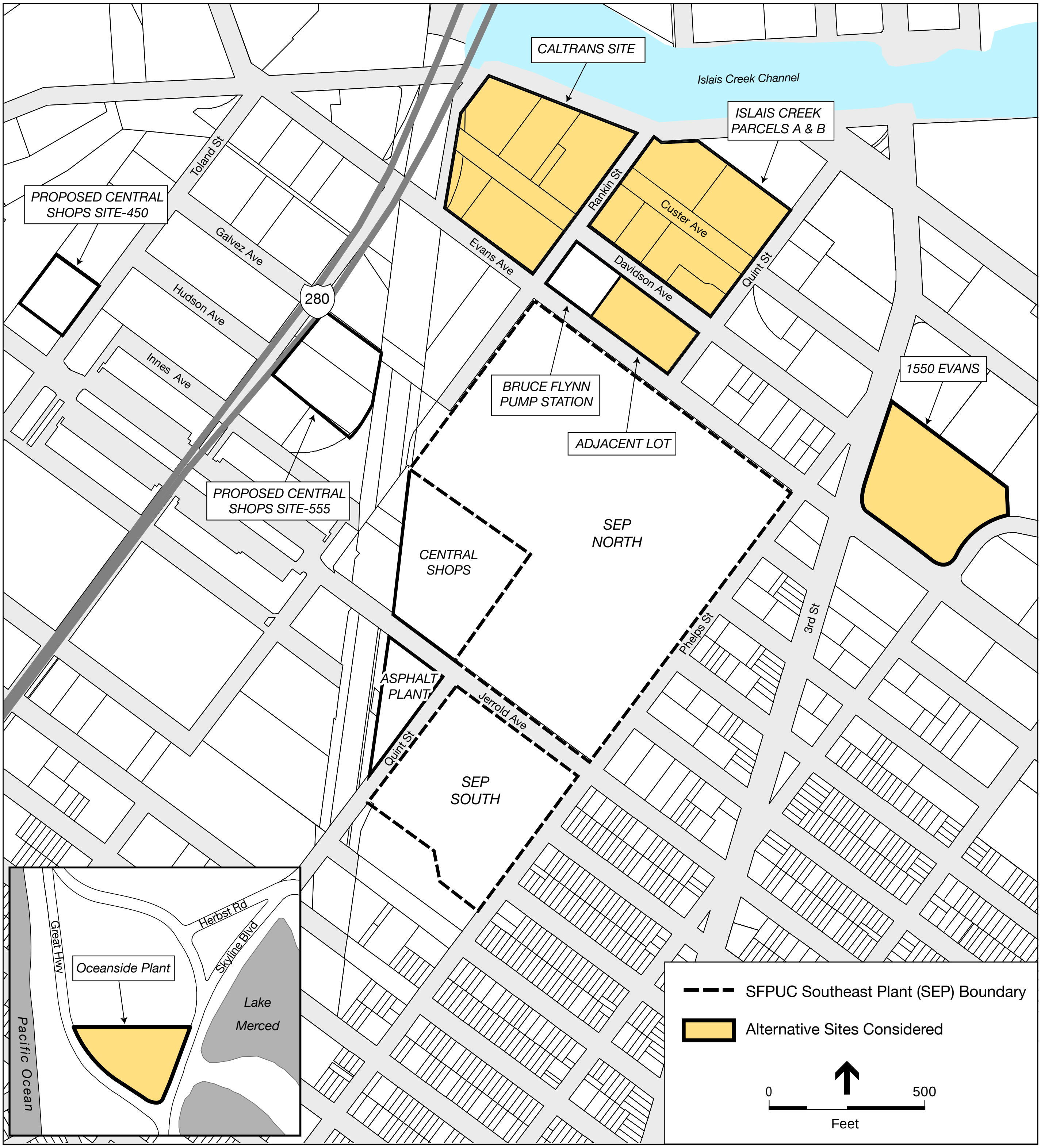
6.5 Alternatives Considered but Eliminated From Further Analysis

This section describes numerous potential alternatives that were considered for analysis in the EIR but were rejected from detailed analysis. As discussed in Section 6.2, above, the San Francisco Planning Department evaluated potential alternatives for their ability to avoid or reduce the significant adverse impacts attributable to the proposed project, their feasibility, and their ability to achieve most of the basic objectives of the project. In most cases, the Planning Department determined that the alternative concepts or locations were infeasible or unable to achieve most of the project's basic objectives, or would result in similar or more severe environmental impacts compared to those of the project. Some alternatives were rejected because they lacked distinct environmental advantages relative to the proposed project or the alternatives analyzed in Section 6.3 above.

This section presents a description of each potential alternative considered and the reasons for its elimination from further analysis, covering a total of 19 alternatives. The discussions include a brief description of the alternative, the source of the alternative concept, the effectiveness of the alternative to avoid or substantially reduce significant impacts of the proposed project, the feasibility of the alternative, and the ability to meet project objectives (using the objectives as numbered in Table 6-2, above). The alternatives considered are grouped according to the following categories: different locations, different site layouts, different preservation strategies for historical resources, and miscellaneous alternatives.

6.5.1 Alternative Site Locations

Seven alternative site locations or combinations of locations were considered, as described below. **Figure 6-7** shows the general locations of parcels considered in these alternatives.



SOURCE: Brown and Caldwell, CH2M Hill, Black and Veatch, Biosolids Digester Facilities Project Alternatives Analysis Report, December 2014; Southeast Digester Task Force, Review of the Biosolids Digester Facility Project by the Southeast Digester Task Force for the San Francisco Public Utilities Commission, Final Document, June 2, 2010.

SFPUC Biosolids Digester Facilities

Figure 6-7
Parcels Considered for Potential Alternative Sites

6.5.1.1 Project Site Plus SEP South

This alternative would develop the BDFP facilities at SEP South, Central Shops, Asphalt Plant, and Quint Street between Jerrold Avenue and the Caltrain right-of-way. This alternative would demolish all solids processing facilities at SEP South. Two facility configurations were considered. This alternative is from the Southeast Digester Task Force Report.[32]

Impact Reduction

This alternative lacks distinct environmental advantages relative to the proposed project or the SEP South/Quint Street Alternative. Compared to the BDFP, this alternative would result in greater project-level impacts on historical resources due to demolition of the historic digesters at SEP South, which are also contributors to a historic district; greater potential for impacts related to odors if the digesters were located at SEP South; and greater impacts on prehistoric archeological resources.

Feasibility

This alternative is feasible. However, it would entail greater risk to existing operations during construction, as the existing solids treatment needs to stay in operation. Also, construction at SEP South would be piecemeal (e.g., demolish/rebuild one digester at a time), so it would require more complicated construction sequencing. Temporary and/or interim facilities may also need to be built to sustain full plant operation throughout construction.

Ability to Meet Project Objectives

This alternative would meet most of the project’s objectives. It would only partially meet Objective 8, because if the digesters are located at SEP South, limiting odors at the SEP property boundary would be more difficult than for the BDFP. It would not meet Objectives 11 and 12 because use of the SEP South site would require more complex construction, increasing construction duration and costs and thereby reducing rate payer affordability.

6.5.1.2 SEP South and Caltrans Site

This alternative would develop the BDFP facilities at SEP South and the Caltrans site (comprised of both privately- and Caltrans-owned parcels located north of Evans Avenue and west of Rankin Street). This alternative would demolish SEP South solids processing facilities and develop the proposed facilities at the above-referenced locations. New digesters would be constructed at SEP South. This alternative is from the Southeast Digester Task Force Report.[33]

[32] As described in the Southeast Digester Task Force Report, 2010, Site Plan Option 1a of the Digester Task Force would locate digestion processes on the current SEP South parcel; and Site Plan Option 1b of the Digester Task Force would locate digestion processes on the Central Shops site.

[33] As described in the Southeast Digester Task Force Report, 2010, the Caltrans site, comprised of eight parcel lots, is surrounded by Evans Avenue, Rankin Street, Islais Creek, and the railroad tracks.

Impact Reduction

Compared to the BDFP, this alternative would result in greater project-level impacts on historical resources due to demolition of the historic digesters at SEP South, which are also contributors to a historic district; greater impacts on prehistoric archeological resources; and greater impacts related to odors as the digesters would be located at SEP South closer to residences. The risk of damage associated with flooding would also be greater for facilities at the Caltrans site. However, this alternative would avoid demolition of Central Shops Buildings A and B and the associated significant impact on historical resources.

Feasibility

This alternative is feasible. However, site acquisitions, design, and construction would be more complicated than what is anticipated for the BDFP. Because three of the parcels on the Caltrans site are privately owned, eminent domain proceedings could be required to acquire the parcels. The 2 Rankin site (one of the parcels within the Caltrans site) is also considered as a potential site for a collection system improvement (e.g., for the Central Bayside System Improvement Project). Solids processing facilities would be developed at two sites 1,600 feet apart, reducing efficiency (e.g., due to the distance of underground connections between facilities, the need to pump sludge, the need for two set of facilities/equipment including control center, and separate odor control systems) and minimizing redundancy. Permanent closure of Davidson Avenue northwest of Rankin Street would be required. More complicated flood protection measures would also be required, as the Caltrans site is within the 100-year flood zone. Construction at SEP South would be piecemeal (e.g., demolish/rebuild one digester at a time) and would require more complicated construction sequencing. Temporary and/or interim facilities may also need to be built to sustain full plant operation throughout construction. This alternative would also entail greater risk to existing operations during construction compared to the project.

Ability to Meet Project Objectives

This alternative would meet most of the project's basic objectives. It would only partially meet Objectives 6, 8, and 10, because (1) the 1,600-foot separation of solids processing facilities would reduce reliability and operational flexibility, (2) limiting odors at the SEP property boundary would be more difficult due to locating digesters at SEP South closer to residences, and (3) locating solids processing facilities at the Caltrans site would place them within the 100-year flood zone, requiring more complex design measures in order to accommodate or adapt to expected sea level rise. It would not meet Objectives 11, and 12 because use of the SEP South site would require more complex construction, increasing construction duration and reducing rate payer affordability.

6.5.1.3 Caltrans Site, Islais Creek Parcels, and Bruce Flynn Pump Station Adjacent Lot

This alternative would develop the BDFP facilities at the combined Caltrans site, Islais Creek Parcels A and B, and Bruce Flynn Pump Station adjacent lot. This alternative is from the Southeast Digester Task Force Report.[34]

Impact Reduction

This alternative has no environmental advantages compared to the other alternatives carried forward, particularly the Pier 94 Backlands Alternative. While direct project impacts on historical resources would be avoided because Central Shops Buildings A and B would not be demolished, the risk of flooding at the sites identified for this alternative would be greater than the risk at the BDFP site. This alternative would not avoid or reduce the cumulative impact on the historic district, as it would replace the function of the existing digesters and facilitate the eventual removal of the digesters and associated structures comprising a substantial portion of a historic district.

Feasibility

This alternative is feasible. However, due to the multiple sites involved, site acquisition and construction would be more complicated than anticipated for the BDFP. Because three of the parcels within the Caltrans site are privately owned, eminent domain proceedings could be required to acquire the parcels. In addition, the 2 Rankin site (one of the parcels within the Caltrans site) is also considered as a potential site for a collection system improvement (e.g., for the Central Bayside System Improvement Project). Permanent street closures (e.g., Davidson Avenue) would be required, and underground pipe connections between facilities would be complicated by crossing multiple public rights-of-way. More complicated flood protection measures would also be required, as all of the proposed sites are within the 100-year flood zone.

Ability to Meet Project Objectives

This alternative would meet some of the basic project objectives. It would only partially meet Objectives 2, 6, 10, 11, and 12, for multiple reasons. Inclusion of multiple sites not currently owned by the SFPUC would affect timely construction of the proposed facilities and the ability to maintain ratepayer affordability. Relative to the BDFP, reliability and operational flexibility would be reduced due to the 1,600-foot distance between proposed and existing solids processing facilities. Locating the facilities at these more distant sites would not provide redundant infrastructure for existing processes. More complex design measures than what are proposed for the BDFP (such as elevating equipment and identifying access routes to the site from the SEP during flood conditions) would be required in order to accommodate or adapt to expected sea level rise.

34 As described in the Southeast Digester Task Force Report, 2010. Parcels A and B are located adjacent to the Caltrans site, north of Davidson Avenue where existing warehouses are located. The Bruce Flynn Pump Station adjacent lot is located across from the SEP, between Rankin Street, Davidson Avenue, Evans Avenue, and Quint Street. A rail spur splits the property.

Limiting odors at the SEP property boundary would be more difficult due to the proximity of these sites to sensitive receptors.

6.5.1.4 SEP South/Asphalt Plant Site

This alternative would develop the proposed BDFP facilities at the Asphalt Plant and SEP South. This alternative would demolish all solids processing facilities at SEP South. This alternative is based on the site layout alternatives described in the Alternatives Analysis Report.[35]

Impact Reduction

While this alternative would avoid impacts on Central Shops Buildings A and B, it would result in impacts on historical resources due to potential demolition of buildings and other structures within the historic district (whereas the BDFP and other alternatives would replace this function, ultimately allowing for the future demolition of the digesters). The SEP South/Quint Street Alternative would achieve the same environmental advantages of this alternative, without demolition of the historic digesters.

Feasibility

This alternative is feasible. However, it would entail greater risk to existing operations during construction, as the existing solids treatment would need to stay in operation. Also, construction at SEP South would be piecemeal (e.g., demolish/rebuild one digester at a time), so it would require more complicated construction sequencing. This alternative would substantially disrupt existing solids operations, and temporary facilities may also be required to sustain full plant operation throughout construction.

Ability to Meet Project Objectives

This alternative would meet most of the project objectives. It would partially meet Objective 8, because it would be difficult to limit odors to the fence line. It would not meet Objectives 11 and 12, because use of the SEP South site would require more complex construction, increasing construction duration and reducing rate payer affordability compared to the BDFP.

6.5.1.5 Bruce Flynn Pump Station Adjacent Lot/Asphalt Plant/Central Shops

This alternative would develop the BDFP facilities at Bruce Flynn Pump Station adjacent lot (e.g., for biosolids dewatering), Asphalt Plant, and Central Shops. This alternative is based on the site layout alternatives described in the Alternatives Analysis Report.[36]

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[35] Developed as part of preservation alternatives evaluation process, based on site layout alternatives described in SFPUC Biosolids Digester Facilities Project Alternatives Analysis Report, December 2014.

[36] Developed as part of preservation alternatives evaluation process, based on site layout alternatives described in SFPUC Biosolids Digester Facilities Project Alternatives Analysis Report, December 2014. Use of the Bruce Flynn Pump Station adjacent lot was considered to site unit processes that require frequent truck hauling (e.g., biosolids dewatering) or for future (post-2022) facilities.

Impact Reduction

The risk of damage from flooding would be greater under this alternative than under the BDFP due to siting at the Bruce Flynn Pump Station adjacent lot. This alternative would offer no substantial environmental benefits as compared to the BDFP, since it would result in the same or similar construction and operational impacts and therefore would not avoid or substantially reduce significant impacts of the proposed project.

Feasibility

This alternative is feasible. However, solids processing facilities would be developed at sites about 1,000 feet apart, reducing efficiency (e.g., due to the distance of underground connections between facilities, the need to pump sludge, the need for two sets of facilities/equipment including control center and separate odor control systems, etc.) and reducing operational redundancy. In addition, the Bruce Flynn Pump Station site is divided by an operating rail spur, which would complicate underground pipe connections between facilities across the rail spur.

Ability to Meet Project Objectives

This alternative would meet most of the project's basic objectives. It would not meet Objective 2 because the 1,000-foot separation of proposed facilities from other parts of the SEP and space constraints would reduce how efficiently existing SFPUC infrastructure and resources are used.

6.5.1.6 SEP South

This alternative would develop the proposed solids processing facilities at SEP South while rebuilding digesters in place (one at a time). This alternative is from the Needs Assessment Report.[37]

Impact Reduction

Compared to the BDFP, this alternative would result in different significant impacts on historical resources, because it would include demolition of the digesters at SEP South (which are contributors to a historic district) while retaining Central Shops Buildings A and B. This alternative would result in more severe impacts related to odors, as the digesters would be located at SEP South close to sensitive receptors. This alternative would also increase direct impacts on a known prehistoric resource at SEP south. The SEP South/Quint Street Alternative would better achieve the intent of this alternative by building the digesters farther from residences.

Feasibility

This alternative is feasible. Compared to the BDFP, this alternative would entail greater risk to existing operations because one digester would be out of commission at all times during construction. Construction at SEP South would be piecemeal. Temporary and/or interim facilities may also need to be built to sustain full plant operation throughout construction.

[37] As described in the Needs Assessment Report, 2016.

Ability to Meet Project Objectives

This alternative would meet some of the basic project objectives. It would not meet Objectives 1 and 3 because the same treatment process would be installed (instead of using new technology) and digester capacity would not increase to reliably treat projected 2045 flows and loads. It would partially meet Objectives 4 and 8 because it would not upgrade to Class A biosolids and instead would continue to produce Class B biosolids, and it would be difficult to achieve limiting odors at the fence line because of the proximity to residences. It would not meet Objectives 11 and 12 because use of the SEP South site would require more complex construction, increasing construction duration to about 25 years and reducing rate payer affordability compared to the BDFP.

6.5.1.7 Asphalt Plant and 1550 Evans Avenue Sites

This alternative would develop the BDFP facilities at 1550 Evans Avenue and the Asphalt Plant. This alternative is based on public comment received during the EIR scoping period.[38]

Impact Reduction

This alternative would avoid the project's significant unavoidable historical resource impacts because Central Shops Buildings A and B would be retained in place. Otherwise, this alternative would result in similar environmental impacts as the BDFP, because similar construction and operations activity would occur. The SEP South/Quint Street Alternative would better achieve the intent of this alternative.

Feasibility

This alternative is potentially feasible; however, there are other long-term uses envisioned for 1550 Evans Avenue, including replacement of the Southeast Community Facility, currently located at 1800 Oakdale Avenue, which could include an academic institution. Solids processing facilities would be developed at sites about 1,700 feet apart, increasing operational complexity (e.g., due to the amount of underground connections between facilities and the need to pump sludge) and reducing efficiency (e.g., the distance between the two sites is too far to optimize operations, as it would require two sets of facilities equipment including control center and separate odor control systems).

Ability to Meet Project Objectives

This alternative would meet most of the project's basic objectives. It would partially meet Objective 6 because, relative to the BDFP, efficiencies resulting from use of existing resources and facilities would not be maximized due to the 1,700-foot separation of solids processing facilities.

[38] As described in scoping comments from David Pilpel, adapted to include the Asphalt Plant due to space limitations at 1550 Evans Avenue.

6.5.2 Alternative Site Layouts

6.5.2.1 Digesters Adjacent to Jerrold Avenue

This alternative would develop the BDFP facilities at Central Shops, Asphalt Plant, and SEP South, with the digesters located adjacent to Jerrold Avenue. This alternative is based on the Alternatives Analysis Report.[39]

Impact Reduction

This alternative would not materially alter the impact conclusions for the BDFP, and in fact would locate the digesters closer to residences. Therefore, this alternative offers no environmental advantages and would not meet the requirements of the CEQA alternatives analysis.

Feasibility

This alternative is feasible.

Ability to Meet Project Objectives

This alternative would meet most of the project objectives. It would only partially meet Objectives 8, 11, and 12 for the following reasons: odor sources would be relatively close to the fence line, the alignment and arrangement of structures would be poor, and the alternative would require more complex construction, increasing construction duration and reducing affordability compared to the BDFP.

6.5.2.2 Digesters in Clustered Configuration

This alternative would develop BDFP facilities at Central Shops, Asphalt Plant, and SEP South, with the digesters in a layout with a more clustered configuration rather than linear layout. This alternative is based on the Alternatives Analysis Report.[40]

Impact Reduction

This alternative would not materially alter the impact conclusions for the BDFP. Therefore, this alternative offers no environmental advantages and would not meet the requirements of the CEQA alternatives analysis.

Feasibility

This alternative is feasible.

[39] As described in the BDFP Alternatives Analysis Report, 2014.
[40] As described in the BDFP Alternatives Analysis Report, 2014.

Ability to Meet Project Objectives

This alternative would meet most of the project objectives. It would only partially meet Objectives 6, 9, 11, and 12 for the following reasons: reliability and operational flexibility would be reduced due to limited consolidation and optimization of the site layout, the alignment and arrangement of structures would be poor, and the alternative would require more complex construction, increasing construction duration and reducing affordability compared to the BDFP.

6.5.2.3 Digesters in Two Rows

This alternative would develop the BDFP facilities at Central Shops, Asphalt Plant, and SEP South, with the digesters in a layout of two rows of three digesters. This alternative is based on the Alternatives Analysis Report.[41]

Impact Reduction

This alternative would not materially alter the impact conclusions for the BDFP. Therefore, this alternative offers no environmental advantages and would not meet the requirements of the CEQA alternatives analysis.

Feasibility

This alternative is feasible.

Ability to Meet Project Objectives

This alternative would meet most of the project objectives. It would only partially meet Objectives 8 and 9 because odor sources would be relatively close to the fence line and the alignment and arrangement of structures would be poor.

6.5.3 Alternative Approaches to Preserve Historical Resources

6.5.3.1 Retain Central Shops Buildings in Place

This alternative would develop the BDFP facilities as described in Chapter 2, *Project Description,* redesigned to include full preservation and reuse/repurpose of Central Shops Buildings A and B in place as part of the project. This alternative was identified in the Preservation Alternatives Memo as a full preservation alternative.[42]

Impact Reduction

This alternative would avoid significant impacts on individual historical resources by retaining the Central Shops buildings in place; however, impacts associated with construction duration

[41] As described in the BDFP Alternatives Analysis Report, 2014.
[42] Developed as part of preservation alternatives evaluation process for this EIR (FP2).

could increase. The environmental advantages of this alternative would be the same as those of the SEP South/Quint Street Alternative.

Feasibility

This alternative is infeasible for numerous reasons, including the following: (1) the location of Buildings A and B, in the middle of the BDFP site, constrains overall space available for required aboveground facilities as well as access to required underground facilities; (2) the total square footage of Buildings A and B (66,200 square feet) is inadequate for the proposed uses (requiring about 136,800 square feet); (3) the configuration would constrict operations, making them inefficient; and (4) space constraints would require use of other existing SEP areas and would interfere with ongoing SEP operations. Even if feasible, this alternative would require a complete redesign of project layout that would result in substantial project delay, and it would require disassembling and temporarily relocating Buildings A and B to construct underground project components before reconstructing them in place consistent with the Secretary of Interior's Standards.

Ability to Meet Project Objectives

Because this alternative is infeasible, it would not meet the project objectives.

6.5.3.2 Relocate Central Shops Buildings within SEP

This alternative would develop the BDFP facilities as described in Chapter 2, *Project Description*, redesigned to include relocation of Central Shops Buildings A and B within the SEP. This alternative was identified in the Preservation Alternatives Memo as a full preservation alternative.[43]

Impact Reduction

This alternative would avoid the impact of demolishing a historical resource by instead relocating the buildings elsewhere in the SEP and rehabilitating them consistent with the Secretary of Interior's Standards. If Central Shops Buildings A and B were to be relocated within the historic district, it would increase the proportion of non-contributors and thereby to a small degree reduce the integrity of the historic district. The environmental advantages of this alternative are the same as or less than those of the SEP South/Quint Street Alternative.

Feasibility

This alternative is infeasible because there is insufficient space to accommodate both Buildings A and B within the remaining SEP property. The largest open space (parking lot) within the SEP is about 57,700 square feet, which is less than the 66,200-square-foot area of the Central Shops buildings if they were put side by side without any setbacks.

[43] Developed as part of preservation alternatives evaluation process for this EIR (FP4).

Ability to Meet Project Objectives

Because this alternative is infeasible, it would not meet the project objectives.

6.5.3.3 Relocate Central Shops Buildings to SFPW Site

This alternative would develop the BDFP facilities as described in Chapter 2, *Project Description*, and relocate Central Shops Buildings A and B to the new SFPW Central Shops site opposite the Caltrain tracks and continue use at this new location. This alternative was identified in the Preservation Alternatives Memo as a full preservation alternative.[44]

Impact Reduction

This alternative would reduce historical resource impacts to a less-than-significant level by avoiding the impacts of demolition, while relocating Central Shops Buildings A and B in proximity to their original location, retaining their current use, and rehabilitating them consistent with the Secretary of the Interior's Standards. Otherwise, this alternative lacks distinct environmental advantages over Alternatives B, C, or D.

Feasibility

This alternative is infeasible, because SFPW needs to maintain an ongoing, operational Central Shops facility, such as under the current plan to complete construction of the new Central Shops facility before abandoning the old location and relocating to the new location.

Ability to Meet Project Objectives

Because this alternative is infeasible, it would not meet the project objectives.

6.5.3.4 Retain and Expand Central Shops Buildings

This alternative would develop the BDFP facilities at the Central Shops and Asphalt Plant sites, redesigned to retain both Buildings A and B in place, with expansion of the buildings (e.g. adding a second story or addition) consistent with the Secretary of the Interior's Standards. This alternative was identified in the Preservation Alternatives Memo as a partial preservation alternative.[45]

Impact Reduction

This alternative would reduce historical resources impacts due to demolition of Central Shops Buildings A and B to less-than-significant levels and lessen impacts on their integrity because adaptive modifications and reuse would be required to be consistent with the Secretary of the Interior's Standards. Otherwise, this alternative would have the same or similar impacts as the project. Alternatives B, C, and D would better achieve the environmental advantages of this alternative.

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[44] Developed as part of preservation alternatives evaluation process for this EIR (FP6).
[45] Developed as part of preservation alternatives evaluation process for this EIR (PP1).

Feasibility

This alternative is infeasible. Central Shops Buildings A and B are in the middle of the BDFP site, which has little to no space to spare, making the layout of this alternative inefficient and more costly than the project. The diagonal orientation of the BDFP facilities, compared with the rectilinear orientation of Central Shops Buildings A and B, makes retaining a portion of Buildings A and B problematic from a design standpoint. Even if feasible, this alternative would require a complete redesign of project layout that would result in substantial project delay, and it would require disassembling and temporarily relocating Buildings A and B to construct underground project components.

Ability to Meet Project Objectives

Because this alternative is infeasible, it would not meet the project objectives.

6.5.3.5 Retain a Portion of Central Shops Buildings

This alternative would develop the BDFP facilities at Central Shops and Asphalt Plant, redesigned to retain a portion of both Buildings A and B in place, such as one or two exterior glass curtain walls, or a portion of both buildings. This alternative was identified in the Preservation Alternatives Memo as a partial preservation alternative.[46]

Impact Reduction

This alternative would reduce the severity of the project's impacts on historical resources, but not to a less-than-significant level, and therefore would not provide substantial environmental benefit compared to the BDFP. Alternatives C and D would better achieve the intent of this alternative.

Feasibility

This alternative is infeasible. Central Shops Buildings A and B are in the middle of the BDFP site, which has little to no space to spare, making the layout of this alternative inefficient and more costly than the project. The diagonal orientation of the BDFP facilities, compared with the rectilinear orientation of Central Shops Buildings A and B, makes retaining a portion of the Buildings A and B problematic from a design standpoint. Even if feasible, this alternative would require a complete redesign of project layout that would result in substantial project delay, and it would require disassembling and temporarily relocating Buildings A and B to construct underground project components.

Ability to Meet Project Objectives

Because this alternative is infeasible, it would not meet the project objectives.

[46] Developed as part of preservation alternatives evaluation process for this EIR (PP2).

6.5.3.6 Retain a Portion of Central Shops Building A Only

This alternative would develop the BDFP facilities at Central Shops and Asphalt Plant, demolishing Building B and part of Building A; relocate a portion of Building A to Jerrold Avenue where it could fit within the BDFP site plan; and repurpose the relocated portion of Building A. This alternative was identified in the Preservation Alternatives Memo as a partial preservation alternative.[47]

Impact Reduction

This alternative would reduce the severity of the project's impacts on historical resources, but not to a less-than-significant level, and therefore would not provide substantial environmental benefit compared to the BDFP. Alternatives C and D would better achieve the intent of this alternative.

Feasibility

This alternative is feasible, as it would be possible to retain portions of one or two walls of Building A as a wall (or screen wall) and relocate it along Jerrold Avenue and integrate it with proposed facilities (e.g., Maintenance Shops 1 or 2). This alternative would require architectural redesign to integrate the historic buildings. Relocating portions of the walls of Building A would not be consistent with the Secretary of the Interior's Standards, would add cost, and would increase construction duration.

Ability to Meet Project Objectives

This alternative would meet most of the basic objectives of the project. It would not meet Objectives 11 and 12, because the construction schedule would be more complex and consequently the alternative would be less affordable than the BDFP.

6.5.3.7 Relocate One Central Shops Building Only

This alternative would develop the BDFP facilities at Central Shops and Asphalt Plant, demolishing either Central Shops Building A or Building B and relocating the other building to a similar industrial setting in San Francisco consistent with the Secretary of the Interior's Standards. This alternative was identified in the Preservation Alternatives Memo as a partial preservation alternative.[48]

Impact Reduction

This alternative would reduce the severity of the project's impacts on historical resources, but not to a less-than-significant level, and it would not sufficiently reduce the severity of the impact to provide adequate benefits of a partial preservation alternative. Buildings A and B are considered a single historical resource, and relocation of one building without the other would not meet the needs of a partial preservation alternative. Therefore, this alternative would not provide substantial

[47] Developed as part of preservation alternatives evaluation process for this EIR (PP3).
[48] Developed as part of preservation alternatives evaluation process for this EIR (PP4).

environmental benefit compared to the BDFP. Alternatives C and D would better achieve the intent of this alternative.

Feasibility

This alternative is potentially feasible, assuming an appropriate relocation site is available.

Ability to Meet Project Objectives

This alternative would meet most of the project objectives. It would partially meet Objectives 11 and 12, because the construction schedule would be more complex and a site with a similar industrial setting would have to be found. Consequently, the alternative would be less affordable than the BDFP.

6.5.4 Miscellaneous Other Alternative Strategies

6.5.4.1 Divert Wastewater Flows to the Oceanside Water Pollution Control Plant

This alternative would continue use of existing SEP solids processing facilities and construct a tunnel to divert wastewater flows to the Oceanside Water Pollution Control Plant for treatment ("Cayuga Diversion"). Additionally, liquid wastewater treatment would still occur at the SEP. This concept was based on public comment received during the EIR scoping period.[49]

Impact Reduction

This alternative would not preclude the need for new solids facilities at the SEP and thus lacks any environmental advantages over the project. This alternative would also result in environmental impacts at different locations, including tunnel construction sites as well as at the Oceanside Water Pollution Control Plant (where THP would be needed to treat excess solids). Therefore, this alternative would not meet the requirements of the CEQA alternatives analysis.

Feasibility

At a conceptual level, this alternative is potentially feasible, but no engineering studies have been conducted to determine actual feasibility.

Ability to Meet Project Objectives

If this alternative is feasible, it is assumed that the alternative would meet the treatment capacity for projected 2045 flows and loads, achieving Objective 3, but overall this alternative would not

[49] The Cayuga Diversion was discussed preliminarily during previous sewer system master planning efforts. In order to be a mitigation or alternative for the BDFP as suggested in scoping comments from David Pilpel, the Cayuga Diversion would need to shift a portion of untreated flows from the SEP across town to the Oceanside Water Pollution Control Plant. This would be a system-wide change to the collection and treatment system. At this time, the SSIP is prioritizing improving aging infrastructure, assuring reliable operations, and maintaining regulatory compliance over system-wide changes.

meet any of the project's other objectives. It would not replace existing SEP solids handling infrastructure, maximize efficiency of current treatment resources, beneficially use 100 percent of biosolids and biogas, build redundant infrastructure, improve seismic reliability, limit odors, provide visual improvements at the SEP, or adapt to sea level rise; thus, this alternative would not meet Objectives 1, 2, 4, 5, 6, 7, 8, 9, or 10. It would also not meet Objectives 11 and 12, since construction would be delayed for a minimum of several years and would have an unknown construction duration, and costs for conducting the required studies, design, environmental review, and construction of a tunnel to the Oceanside Water Pollution Control Plant would not maintain rate payer affordability. It is assumed this alternative would continue to produce Class B biosolids and use some of the biogas generated, but this alternative would not beneficially use 100 percent of these materials.

6.5.4.2 Use Railway Instead of Trucks for Hauling Biosolids

This alternative would develop the project as described in Chapter 2, *Project Description*, but would modify long-term operational practices to haul biosolids from the SEP using railway instead of trucks. This concept was based on public comment received during the EIR scoping period.[50]

Impact Reduction

This alternative would not materially alter the impact conclusions for the BDFP. While there could be a reduction in the distance, frequency, and number of truck trips for hauling biosolids and commensurate reduction in air pollutant emissions from trucks, there would be increased handling of biosolids from truck to rail and rail to truck and increased emissions associated with rail use; the net effect on regional air quality in the air basin is unknown. There are no significant impacts related to biosolids hauling included in the proposed project that would be alleviated by this alternative. Therefore, this alternative would not meet the requirements of the CEQA alternatives analysis.

Feasibility

This alternative is potentially feasible if a rail line is available to a Class A biosolids end use destination.

Ability to Meet Project Objectives

This alternative, if feasible, would meet most of the project's basic objectives. The only exceptions would be the uncertainty associated with meeting or partially meeting Objectives 11 and 12, due to unknown implications on the construction schedule if rail spurs are needed and unknown net effects on costs that affect rate payer affordability.

[50] As described in scoping comments from David Pilpel.

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