Draft

TERMINAL FOUR WHARF, WAREHOUSE, AND PILE REMOVAL PROJECT

Initial Study/Mitigated Negative Declaration

Prepared for
California State Coastal Conservancy

March 2020

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CHAPTER 1
Introduction

1.1 Purpose of This Document

The primary purpose of this document is to present decision makers and the public with information concerning the environmental consequences of implementing the Terminal Four Wharf, Warehouse, and Piling Removal Project (project) proposed at Point San Pablo Terminal Four (Terminal Four or project site). A detailed description of the project is provided in Chapter 2 of this document.

This draft Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared by the California State Coastal Conservancy (SCC) in accordance with the provisions of the California Environmental Quality Act (CEQA)[1] and the CEQA *Guidelines*.[2] The SCC serves as the lead agency for development of this document (i.e., the public agency with principal responsibility for approving the project) and is also the applicant proposing to carry out the project. An Initial Study (IS) is prepared by a lead agency to determine whether a project may have a significant effect on the environment and is used to determine the type of CEQA document to be prepared. In accordance with State CEQA *Guidelines* Section 15070, a lead agency shall prepare a mitigated negative declaration (MND) when the IS identifies potentially significant effects but revisions are made to the project that would avoid or mitigate the effects to a point where clearly no significant impacts would occur. This IS/MND is being circulated for public and agency review. Written comments on the Draft IS/MND may be submitted by 5:00 p.m. on April 9, 2020 to:

Marilyn Latta
State Coastal Conservancy
1515 Clay St., 10th Floor
Oakland CA 94612-1401

Written comments may also be sent by electronic mail to marilyn.latta@scc.ca.gov by 5:00 p.m. on April 9, 2020. Comments received during this period will be reviewed and any additions or revisions needed based on the comments received will then be incorporated into a final IS/MND.

This document reflects the SCC's independent judgement and analysis of the environmental effects of the project. The Board of Directors, at a regularly scheduled meeting, will make a determination as to the adequacy of the IS/MND. The SCC Board of Directors will then review the project and decide whether it will be implemented. A Notice of Determination, if made,

1 Public Resources Code Section 21000 *et seq.*

2 California Code of Regulations, Title 14, Division 6, chapter 3, Section 15000 *et seq.*

would then be filed with the Contra Costa County Recorder. The project could proceed after the filing of the Notice of Determination. The documents and other materials that constitute the record of proceedings of this process are on file with the SCC.

1.2 Organization of This Document

The organization and format of this document is stipulated by the CEQA *Guidelines*. Chapter 2, Project Description, presents a detailed description of the project. Chapter 3, Initial Study, includes analysis for 21 specific topics (e.g., Air Quality, Cultural Resources, Transportation, etc.). For each topic on the Environmental Checklist, this IS/MND examines the project to identify potential effects on the environment and discusses anticipated impacts. The four levels of impact are "Potentially Significant," "Less Than Significant with Mitigation Incorporation," "Less than Significant Impact," and "No Impact." A discussion relating the anticipated impacts to each of the CEQA issues then follows. If a significant impact is identified, mitigation is presented to offset any potentially significant impacts.

CHAPTER 2
Project Description

2.1 Project Purpose, Need, and Objectives

The Terminal Four Wharf, Warehouse, and Piling Removal Project (project) is a collaborative effort involving the California State Coastal Conservancy (SCC), City of Richmond (City), and Port of Richmond. The SCC is the proponent of the project and the lead agency under the California Environmental Quality Act (CEQA); the City owns the project site and is a responsible agency under CEQA. This project would remove large amounts of artificial fill, debris, and sources of contamination from the San Francisco Bay (Bay) by Point San Pablo Terminal Four (Terminal Four or project site), which consists of the remains of a wharf, warehouse, and associated pilings and structures. Upon removal of the artificial fill, the project would also enhance a degraded area of shoreline and the associated intertidal and subtidal habitat, and enable the expansion of existing eelgrass beds and rocky intertidal habitats. The project would address the goals established by the SCC, the San Francisco Bay Conservation and Development Commission (BCDC), the National Oceanic and Atmospheric Administration (NOAA), the San Francisco Estuary Partnership, and the Ocean Protection Council in the San Francisco Subtidal Habitat Goals Report,[1] a non-regulatory, 50-year conservation plan that provides guidance and recommendations on how to move forward with science-based subtidal research, protection, and restoration of subtidal habitats in the San Francisco Bay Estuary. The report mapped more than 30,000 derelict pilings in the Bay and prioritized recommendations for removal of pilings and artificial structures to enhance habitat for Pacific herring and many other species in the Bay.

The project is also intended to further the objectives of or to achieve consistency with requirements of many environmental laws and regulations, including the McAteer-Petris Act, which formed the BCDC and its adopted San Francisco Bay Plan; federal and state Endangered Species Acts; Clean Water Act; Magnuson-Stevens Fishery Conservation and Management Act; California Fish and Game Code; Fish and Wildlife Coordination Act; and others.

One contaminant of particular note is creosote, an oily product distilled from crude coal tar that contains hundreds of chemical compounds. Historically, creosote was used to treat wood to make it more resistant to rot and thus more useful as support for piers, wharves, and other aquatic structures. However, the primary constituents of creosote are polycyclic aromatic hydrocarbons

[1] California State Coastal Conservancy and Ocean Protection Council, NOAA National Marine Fisheries Service and Restoration Center, San Francisco Bay Conservation and Development Commission, San Francisco Estuary Partnership, Ocean Protection Council, *San Francisco Bay Subtidal Habitat Goals Report*, *Conservation Planning for the Submerged Areas of the Bay*, 2010.

(PAHs) and alkylated PAHs which account for up to 90 percent of creosote mixtures.[2] PAHs that leach out of creosote-treated piles persist in the environment and are toxic to some organisms. Those organisms that come into direct, extended contact with creosote-treated piles may be adversely affected. Harmful levels of contact may occur if organisms feed on prey species inhabiting the surface of the piles or if organisms lay eggs directly on piles, as is the case with Pacific herring (*Clupea pallasi*). Because the majority of the piles at Terminal Four contain creosote-treated wood, their removal would bring immediate benefits to water quality and the natural habitats and Bay ecosystems. Their removal would also enable the active, natural spread of existing eelgrass (*Zostera marina*) beds, Pacific rockweed (*Fucus distuchis*), and other vegetation and seaweed species near Terminal Four and attendant benefits to Pacific herring and other organisms.

In summary, the objectives of the project are as follows:

- Increase the local and regional ecological health of the Bay by removing derelict pilings, including those containing creosote-treated wood;
- Increase the local and regional ecological health of the Bay by removing large amounts of artificial fill and solid debris from the Bay floor and waters;
- Improve spawning and development success of Pacific herring through removal of creosote-treated piles, which have been shown to have detrimental effects on early life history stages of Pacific herring;
- Maintain the existing degree of shoreline protection while avoiding activities that would increase the current degree of erosion potential along that portion or adjacent portions of the coastline; and
- Protect and expand the existing eelgrass beds and other biological resources.

The need for the project is most effectively demonstrated by examining the case in which the project is not implemented. In such a situation, the deteriorating warehouse, piles, decking, and debris would remain in place and continue to pose a marine debris problem and a navigation hazard, and also continue to degrade and impair water quality. The existing debris and pile field would continue to inhibit the expansion of eelgrass beds. Pacific herring and other fish and marine invertebrates would continue to spawn on derelict creosote-treated piles and be adversely affected by the effects of creosote and PAHs. Adverse effects on Pacific herring from exposure to PAHs include developmental delays, degeneration, changes in movement, and alterations to cardiac function in embryos; lower rate of hatching success; and skeletal defects in larvae.[3] In addition, if the project is not implemented, proposed enhancements to the shoreline that would help address anticipated effects of sea level rise (described in Section 2.4.5) would not be realized.

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2 World Health Organization, Concise International Chemical Assessment Document 62, *Coal Tar Creosote*, 2004.

3 Griffin, F.J., Pillai, M.C., Vines, C.A., Kaaria, J., Hibbard-Robbins, T., Yanagimachi, R., and Cherr, G.N. 1998. *Effects of salinity on sperm motility, fertilization, and development in the Pacific herring, Clupea pallasi*. Biological Bulletin. Vol. 194: pp. 25-35; and Duncan, D. 2014. *The toxicity of creosote treated wood to Pacific herring (Clupea pallasi) embryos and characterization of polycylic aromatic hydrocarbons near creosoted pilings in Juneau, Alaska*. Masters Thesis, University of Alaska Fairbanks.

2.2 Project Location and Ownership

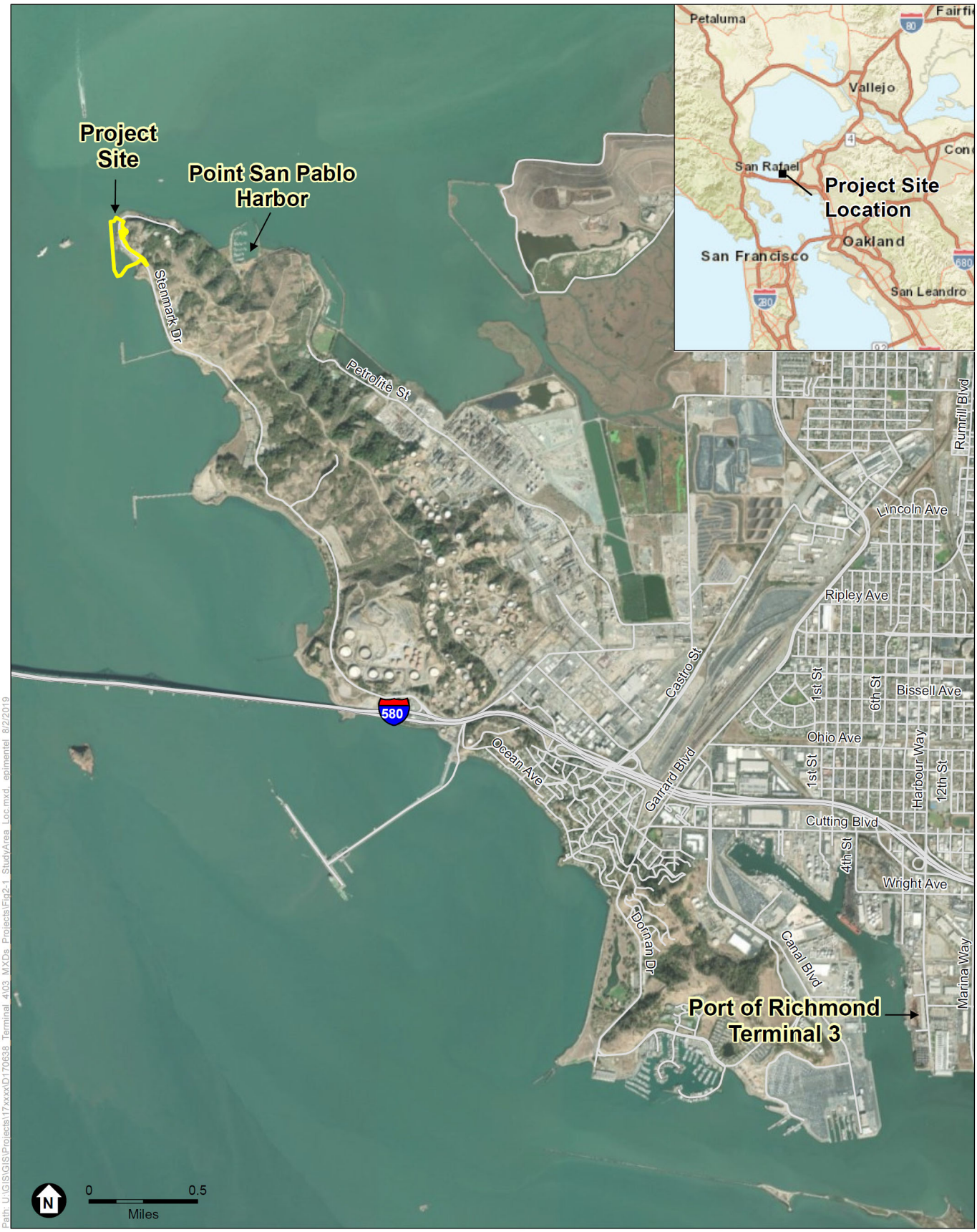
The project site is located on the western face of the Point San Pablo peninsula in the eastern Bay (**Figure 2-1**). The project site address is 2055 Stenmark Drive, Richmond in Contra Costa County, California. The coordinates of the central point of the wharf structures are 37°57'49.11"N, 122°25'45.08"W. The property is owned by the City of Richmond, and managed by and leased through the Port of Richmond. The project site, including access and temporary staging areas, includes all or part of the following parcels: 561-070-009, 561-070-023, and 561-070-021. The project site is bordered by open waters of the Bay to the west (including a major shipping lane and an island with a lighthouse), San Pablo Bay to the north, East Bay Municipal Utility District property to the east, and Point Molate and Chevron property to the southeast.

2.3 Overview of Project Site

Figure 2-2 depicts the approximately 12-acre project site, which includes marine (in-Bay tidal and subtidal) areas and onshore locations. As stated above, Terminal Four consists of the remains of a 82,500 square foot wood wharf; approximately 2,150 standing pilings; a 12,000 square foot warehouse; and an 1,100 square foot office building (refer to **Table 2-1** for the area/quantities of project components). Originally constructed in 1902 as a deep port, Terminal Four has been used over the years for storage and distribution of various goods (e.g., oil refinery products) and fish processing. The project site extends along an armored shoreline at the north and central portions of the pier, and in front of a small cove at the southern end of the pier. Fill was placed in several areas near the site, resulting in shoreline expansion. The Port of Richmond currently leases the site. There are several storage tanks, small buildings, pipelines and railroad tracks within the project site that have been abandoned.

Table 2-1 presents the approximate areas of the marine terminal itself as well as that of the warehouse and the estimated number of piles by type. The remnant wharf is approximately 1,000 feet long and supports an approximately 12,000-square foot warehouse. The wharf's width ranges from about 100 feet at the northern end, to 200 feet at the southern end. There are approximately 2,150[4] standing piles at the wharf, as well as many more downed piles, decking, and other debris that have collapsed onto the Bay floor. As shown in Table 2-1, there is a mix of different types of piles at the site. Below the existing decking and extending both northward and southward from the wharf's connection with the shoreline, some coastal protection is provided via a mix of rock riprap, concrete headwall, concrete slabs and other debris, with additional timber in places. Much of this fill and slope protection appears not to have been engineered as it is substandard in many places.

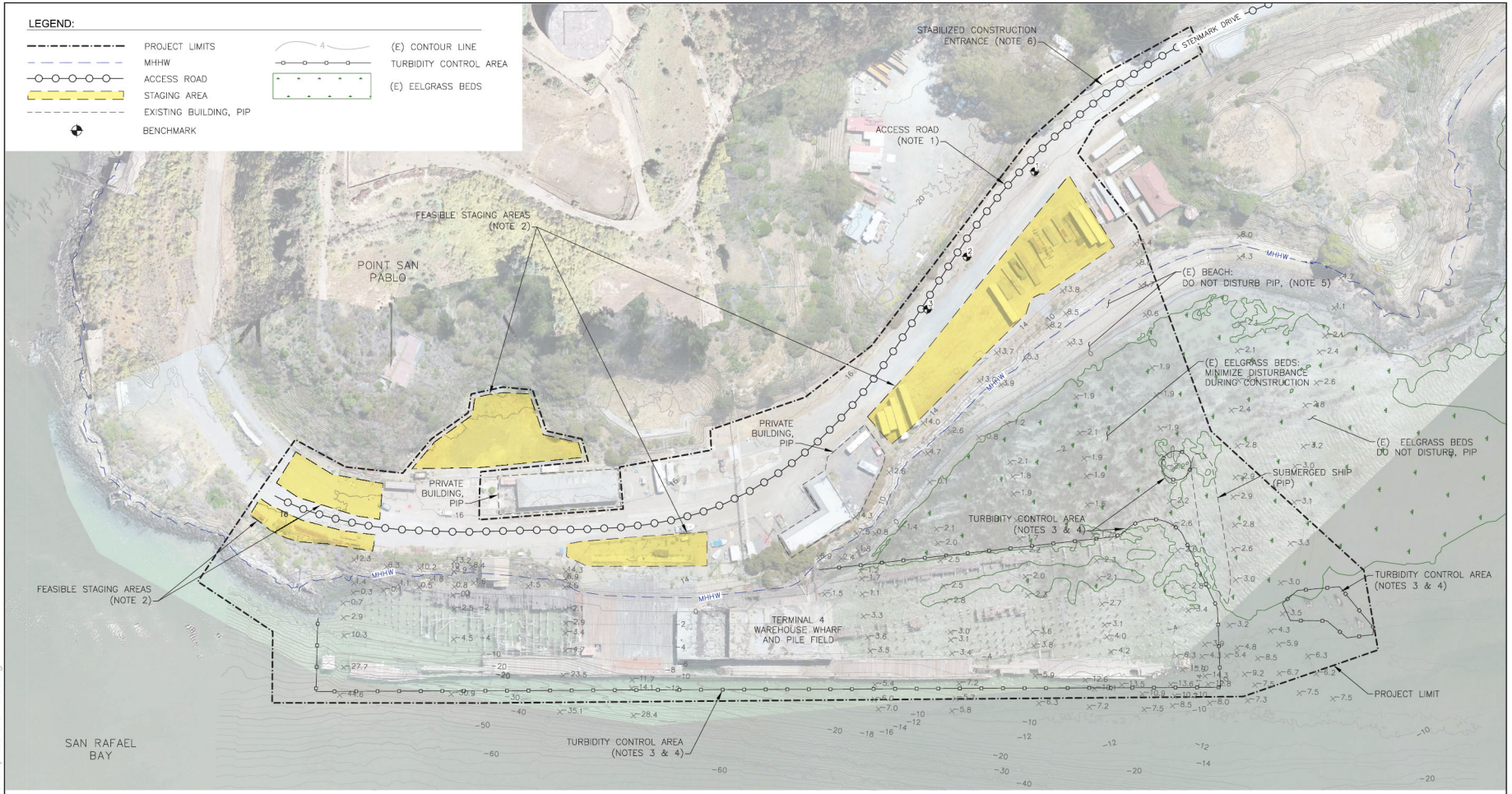
[4] Estimate of the number of piles at Terminal Four is based on C&W Diving Services, Inc., Terminal 4 Dive Inspection Results, 2018. This estimate does not include piles on the Bay floor. While there have been different surveys and estimates of piles at the project site, this estimate provides a reasonable basis for evaluating environmental effects. Conditions at the site are not static. Since the earliest pile survey of the site was completed, some piles have likely broken off and floated away, which may account for discrepancies among the estimates.



SOURCE: DigitalGlobe, 2017.

Terminal Four Wharf, Warehouse, and Piling Removal Project

Figure 2-1
Project Site Location



NOTES:

1. Stenmark Drive is the only access road to the site.
2. Staging areas are shown as feasible. Contractor will execute temporary construction easements with the City of Richmond specifying staging areas and describing access in and around the site.
3. Turbidity curtain Type III or equivalent. The purpose is to protect (E) eelgrass during construction activities by reducing turbidity in the water column. Full length skirt not required in deeper (> 10 ft) water along fenderline. In shallow water (< 10 ft), full length skirt required. Refer to Technical Specifications.
4. Conditions are dynamic and work areas are subject to the action of the fluctuating tides, waves, boat wakes, and current.
5. Use of beach for staging and construction activities is restricted.
6. Follow Caltrans specifications and details (TC-1) for stabilized control construction entrance.
7. Enforce applicable BMP's at all times. Refer to Technical Specifications.
8. PIP = protect in place

0 240
Feet

SOURCE: ESA, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa County, California, sheet G-06, June 2019.

Terminal Four Wharf, Warehouse, and Piling Removal Project

Figure 2-2
Project Site, Access and Staging

TABLE 2-1
SELECTED SITE CHARACTERISTICS

Feature	Approximate Area	
	Square Feet	**Acres**
Project Site	515,300	11.8
Areas within the Project Site where Demolition and Construction Would Occur	186,400	4.3
Areas within the Project Site identified as Potential Staging Areas	49,400	1.1
Structures to be Demolished		
Terminal Four Wharf (Decking)	82,500	1.9
Warehouse	12,000	0.28
Office Building	1,100	0.03
Pilings to be Removed[a]	**Quantity**	
Concrete-Encased Wood Piles	1,795	
Concrete Piles	300	
Creosote-Treated Wood Piles	42	
High-Density Polyethylene Wrapped Steel Piles	12	

NOTES:
[a] Pile quantities are approximate and do not include piles on the Bay floor.

SOURCE: Environmental Science Associates, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa, California, sheet Q-01 June 2019.

The wharf structure is in a state of severe disrepair and sections of decking, piles, and other components of the former warehouse structure regularly break off and either float away or settle on the Bay floor, depending on the material type. This deterioration process is expected to continue, and much of the remaining decking and the warehouse building located on the wharf is likely to eventually collapse into the Bay. This current condition poses a serious navigation hazard to the area and the U.S. Army Corps of Engineers and U.S. Coast Guard routinely retrieve and remove floating piles from the adjacent shipping lanes that are believed to originate from Terminal Four. **Appendix A** includes photographs of the current conditions of Terminal Four.

Habitats within and adjacent to the project site consist of tidal waters and non-tidal wetlands including eelgrass beds, developed areas, ruderal/non-native grassland and coastal scrub adjacent to developed areas. There is currently no land-based recreational or other public use of the site, although boating and fishing does take place near the site. The nearest recreational sites include the Point San Pablo Yacht Harbor, located approximately 0.5 miles east, and Point Molate Beach Park, located approximately 1.8 miles south of the site. The restored former Red Rocks Warehouse Site, a similar SCC project, is located just around the point to the northeast from Terminal Four.

2.4 Construction Activities[5]

2.4.1 Access and Staging

Construction staging activities would occur either from the Bay-side or from the land-side of the project site. Given the nature of the project and site characteristics, most demolition and pile removal is anticipated to be marine-based via barge, while installation of the rock slope protection along the shoreline following demolition activities would be land-based. The nearest navigational channel, used by local ferry service and other vessel traffic, is located approximately 0.1 mile immediately west of the site. The contractor would determine the point of origin of marine-based equipment (barges, etc.); for purposes of impact evaluation, marine-based equipment bound for the project site is assumed to originate from the Port of Richmond Terminal 3 (shown on Figure 2-1).

Land-based access to the site is available from Stenmark Drive, which extends approximately three miles north from an exit off of Interstate 580, just east of the eastern landing of the Richmond-San Rafael Bridge. Stenmark Drive is closed to public access a few hundred feet south of Terminal Four for safety reasons.

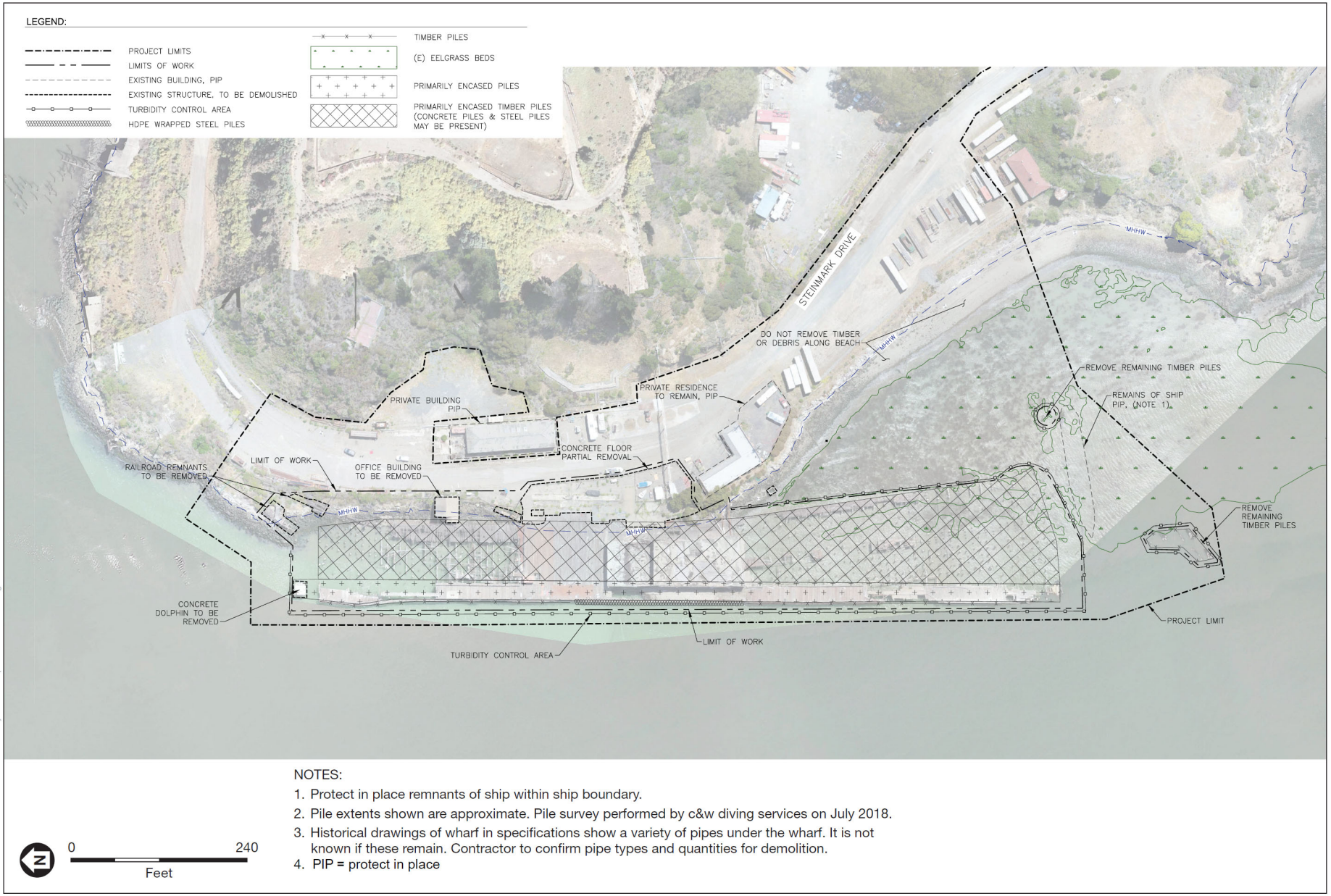
Figure 2-2 indicates onshore areas (totaling about 1.1 acres) that could be used for staging activities such as stockpiling rock and equipment storage.

2.4.2 General Construction Activities

Figure 2-3 indicates the limits of construction work, structures to be demolished and structures to be preserved in place, and areas where pile removal would occur. Demolition and construction activities associated with the project would require 10 to 11 construction workers. **Table 2-2** indicates equipment that is expected to be used during the various construction activities associated with the project. **Table 2-3** indicates truck trips associated with project construction. Regarding marine vessels, off-haul of demolition debris from the project site (expected to occur during weeks 7 through 20 of the construction period) would generate an estimated 18 barge trips. Based on design plans and specifications developed to date, information from other pile removal and marine demolition projects, and site-specific constraints, construction activities for the project include the following:

- **Mobilize, Install Turbidity Curtain.** This step consists of deploying the necessary equipment, material, and services needed to perform the work, and includes installation of turbidity curtains. A turbidity curtain comprises a thick synthetic fabric support and mooring hardware, chains to weigh down the fabric in the water column sometimes topped by a containment boom. The purpose of the turbidity curtain would be to isolate suspended sediment and debris from the surrounding environment, including the eelgrass beds. Figures 2-2 and 2-3 depict the turbidity control areas, within which turbidity curtains would be deployed around the current workface(s). In addition, construction best management practices (BMPs) and the demarcation of property and environmentally sensitive areas to be avoided would be implemented (refer to Section 2.5 for more information).

[5] Information presented in this section is based on the expected methods that would be used by the construction contractor.



NOTES:

1. Protect in place remnants of ship within ship boundary.
2. Pile extents shown are approximate. Pile survey performed by c&w diving services on July 2018.
3. Historical drawings of wharf in specifications show a variety of pipes under the wharf. It is not known if these remain. Contractor to confirm pipe types and quantities for demolition.
4. PIP = protect in place

SOURCE: ESA, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa County, California, sheet D-01, June 2019.

Terminal Four Wharf, Warehouse, and Piling Removal Project

Figure 2-3
Demolition and Pile Removal Areas

TABLE 2-2
CONSTRUCTION EQUIPMENT

Construction Equipment	Mobilization	Demolition							ERSP Construction	Demobilization
		Remove Deck	Remove Piles	Process Debris/Off-Haul	Remove Dolphin	Remove Bottom Debris	Remove Perimeter Infrastructure/ Railroad Section	Remove Fuel Tanks		
Flexifloats, Buoys	√	√	√			√	√	√		√
Turbidity Curtain	√	√	√	√	√	√	√	√	√	√
Crane	√			√	√					√
Air Compressor	√	√	√	√		√	√	√		√
Flat Deck Barge	√	√	√	√	√	√	√	√		√
Derrick Crane Barge	√	√	√		√					
Vibratory Hammer			√							
Flexifloats, Buoys	√	√	√			√	√	√		√
Work Skiff	√	√	√			√	√	√		√
Excavators	√	√	√			√	√	√		√
Generator	√	√	√	√		√	√	√		√
Trucks (pickup, lobed, dump)	√	√	√			√	√	√	√	√
Tugboat	√			√	√					√
Loader				√						
Backhoe								√	√	

NOTES: ERSP = Enhanced Rock Slope Protection

SOURCE: COWI, Cost Report Terminal 4 – Richmond, November 27, 2018.

TABLE 2-3
DAILY TRUCK TRIPS[a] BY CONSTRUCTION ACTIVITY

	Point of Origin[b]		Construction Schedule	Average Daily Trips		Peak Daily Trips	
	Project Site	Debris Sorting Site		Project Site	Debris Sorting Site	Project Site	Debris Sorting Site
Construction Activity		From sorting site to disposal site	Weeks 16-20		14	29	14
	Off-hauling spoils from project site		Weeks 19-21	23			
	Constructing the ERSP[b]		Weeks 19-21	27			
	Additional Truck Trips[c]		Daily	2			

NOTES:

[a] Expressed in round trips: one trip equals one vehicle going to and leaving from the site.

[b] Debris removed via marine-based activities would be transported via barge to an off-site location to be sorted for disposal. The sorting and disposal sites would be determined by the contractor. For purposes of analysis, the Port of Richmond Terminal 3 and Potrero Hills Landfill are the assumed locations for debris sorting and disposal, respectively.

[c] There would likely be about two truck trips to the project site per day to deliver miscellaneous equipment and materials.

- **Marine-Based Removal.** This step comprises the bulk of the demolition and pile removal activities. Overall, demolition and pile removal activities are anticipated to proceed from top to bottom and from the Bay side of the project site landward. Barges (including shallow draft barges, material barges, and derrick crane barge for select activities[6]), excavators, and other equipment would be used to demolish and remove the deck, piles, utilities, warehouse, concrete, and Bay floor debris. Barges would be moved to an offsite location where the demolition waste would be sorted for subsequent disposal. Information specific to pile and Bay floor debris removal is presented below in Section 2.4.3. See Section 2.4.4 for details on disposal of demolition waste.
- **Land-based Removal and Grading**. This step involves deployment of a land-based excavator(s) and other equipment to remove materials along the shoreline, including the concrete headwall, debris and other structures (including part of an inactive railroad spur and former office building). Debris removed using land-based equipment would be hauled offsite via trucks for disposal. Following removal of the concrete wall and other debris along the shoreline, an approximately 300 foot-long section of the shoreline (an approximately 22,000 square foot area) would be graded.
- **Installation of Enhanced Rock Slope Protection (ERSP).** Rock slope protection with ecological enhancements would be installed along the graded portion of the shoreline. Section 2.4.5, below, presents information specific to construction of the ERSP.
- **Remove Turbidity Curtain(s) and demobilize**. Upon completion of the ERSP, the turbidity curtain(s) would be removed. Construction activities at the project site would culminate with cleanup and demobilization.

2.4.3 Pile and Bay Floor Debris Removal

Among the different types of piles to be removed at Terminal Four (concrete-encased wood, concrete, creosote-treated wood, and high-density polyethylene wrapped steels) the vast majority contain creosote-treated wood. The piling removal approach would be required to adhere to all permit conditions and BMPs to minimize release of contaminated materials during the demolition process. The San Francisco Bay Regional Water Quality Control Board, National Marine Fisheries Service (NMFS), and BCDC have provided guidance for removing creosote-treated wood pilings in the Bay, and this guidance is incorporated into the project.[7]

Different types of piles may necessitate different approaches to pile removal, and the contractor may use a mix of pile removal techniques allowed under the terms and conditions of permits issued for this project. Pursuant to the current project designs and specifications, the contractor would prepare a Demolition and Bay Floor Debris Removal Plan, subject to SCC approval. The Demolition and Bay Floor Debris Removal Plan would include (among other things) procedures for removing all types of piles present, based on inspection and condition assessment, that

6 For example, activities requiring use of a derrick crane barge could include lifting the concrete dolphin deck, extracting steel piles, or lifting large portion of the decks.

7 Guidance derived from permits and approvals issued for the San Francisco Bay Creosote Removal and Pacific Herring Habitat Restoration Project implemented at the Red Rock Warehouse site. Additionally, the avoidance and minimization measures specific to pile removal activities have been developed in accordance with the majority of the measures outlined in the USACE 2018 NLAA Programmatic criteria, in order to reduce project effects on sensitive resources.

minimize turbidity generation to the greatest extent possible; procedures for complying with permit conditions; proposed locations for materials handling, sorting, and disposal; and a Marine Safety Plan.[8] The requirements set forth in the project's current design and specifications[9] for pile removal are described below.

Full Removal of Piles

- **Direct Pull.** This method could be used with certain substrate types if the piles have sufficient structural integrity and are not located in areas of known residual contamination. The piling would be wrapped with choler chain or cable attached to a crane and pulled directly upward, removing the pile from the sediment.
- **Vibratory Extraction.** The contractor could use this method where the piles have sufficient structural integrity and there is adequate water depth for the contractor to attempt to remove the entirety of each pile. A vibratory hammer[10] would loosen the pile with vibration, allowing the pile to be pulled straight up and out.
- **Clamshell Removal.** Broken or damaged pilings that cannot be removed by either direct pull or vibratory extraction would be removed by a clamshell bucket.[11]

Partial Removal of Piles

- If the pile lacks sufficient structural integrity for pulling, is sunk so deeply into Bay muds that it cannot be vibrated out (as is likely the case with some of the large, square concrete piles), or breaks off at or near the existing substrate but cannot be removed with a clamshell bucket, or where contamination is assumed to be present in the sediment surrounding the piles, full removal may not be feasible or desirable. In such cases, the contractor would cut the pile using an underwater pneumatic chainsaw. Piles would be cut near the mudline.
- The contractor would be prohibited from using a back-and-forth, rocking movement intended to snap the piling because this generally increases turbidity and leaves a pile stub extending into the water.

These general conditions would be refined once regulatory permits and approvals are issued for this project, which may include refined or additional requirements to protect sensitive resources.

Removal of Piling Stubs and Other Bay Floor Debris

In addition to removing standing piles, the demolition phase of the project would also include the removal of debris on the Bay floor and a limited area of shoreline. Upon completion of wharf, decking, and piling demolition and removal, the contractor would perform post-demolition surveys to document the quantity and type of piling stubs above the mudline, the condition of the Bay's floor, and quantities and types of debris remaining on the Bay floor that would be removed. The contractor would submit the results of the survey descriptions of the proposed approach to

8 Refer to Technical Specifications Section 02220 – Demolition, Subsection 1.03, Submittals, for more information.

9 Refer to Technical Specifications Section 02220 – Demolition, Subsection 3.04, Demolition.

10 A vibratory hammer is a large mechanical device that is suspended from a crane.

11 A clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws: a crane lowers the bucket and the jaws grasp the piling stub as the crane pulls up.

remove the piling stubs and debris. After the piling stub removal survey is approved by the SCC, and after piling stubs to be removed are identified, then the contractor can proceed with cutting piling stubs pursuant to the requirements above with respect to the presence of contamination.

Refer to Section 2.5, Construction Best Management Practices and Other Environmental Protection Measures, for more information on barge operations, work surface and containment.

2.4.4 Demolition Quantities and Disposal

All materials would be disposed offsite. The quantities of materials to be disposed are estimated as follows:[12]

- Piles excluding Bay floor debris: approximately 2,070 tons[13]
- Decking including warehouse: approximately 760 tons
- Bay floor debris: approximately 2,700 tons[14]

In total, debris removal is estimated to require approximately 18 barge loads, assuming 300 tons per barge load.[15] Barges containing debris materials would be towed from the project site to the Port of Richmond's Terminal 3 (shown on Figure 2-1), the Port of San Francisco Pier 96, or another site identified by the contractor. At the sorting location, the debris material would be dried, sorted by type and disposal requirements (e.g., concrete, creosote-treated wood, untreated wood, and miscellaneous metal), placed onto trucks and hauled offsite for recycling or disposal at permitted landfills in accordance with federal, state, and local regulations. The bulk of pile extraction and transportation is expected to be by barge.

Creosote-treated wood would be disposed of at a Class II landfill (permitted to accept "designated" and nonhazardous wastes) and clean demolition debris would be disposed of at a Class III landfill (permitted to accept nonhazardous wastes). For purposes of this evaluation it is assumed that waste, including creosote-treated wood, would be landfilled at an appropriate facility (e.g., Potrero Hills Landfill in Suisun City, Hay Road Landfill in Vacaville, Corinda Los Trancos (Ox Mountain) Landfill in Half Moon Bay, or Keller Canyon Landfill in Pittsburg, California).

2.4.5 Enhanced Rock Slope Protection

The project includes Enhanced Rock Slope Protection (ERSP) to protect a 300-foot extent of shoreline following proposed demolition and debris removal activities. As indicated in Section 2.1, the SCC proposes to maintain the existing degree of shoreline protection at the project site. The ERSP comprises a conventional rock slope protection (RSP) structure, with several biological treatments. For purposes of design, the ERSP is assumed to withstand a 20-year

12 C&W Diving Services, Inc., Terminal 4 Dive Inspection Results, 2018.

13 Environmental Science Associates, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa, California, sheet Q-01, June 2019.

14 COWI, *June 2019 Quantity Estimation of Bay Floor Debris at Terminal 4*. While estimates of Bay floor debris vary, this estimate provides a reasonable basis for evaluating environmental effects.

15 COWI, *June 2019 Coastal Conservancy Basis of Design Estimate*, 2019.

extreme event. The effects of sea level rise were factored into aspects of the ERSP design (e.g., rock requirements, wave forces and wave run-up assessment).[16]

Figures 2-4, **2-5a** and **2-5b** depict the limits of grading, finished grade, typical cross-sections, and the location of the proposed biological enhancements, including living crown, seaweed, and living toe treatments.

ERSP Conventional Elements

Design and engineering criteria for the RSP are based on Caltrans guidelines.[17] Consistent with Caltrans guidelines, the design uses a 20-year return period to assess design wave conditions. The conventional elements of the ERSP include armor stone (to withstand the brunt of wave forces), rock inner layers, geo-synthetic fabric (geotextile), and toe material (featuring a limited amount of repurposed material, where the ERSP is keyed into native soil). The construction of the conventional elements of the ERSP would involve excavation to grade, installation of bedding material (gravel), installation of the geotextile fabric, stockpiling of surplus material, installation of the armor layer (large rock riprap), installation of the toe material (oyster reef balls and large boulders), installation of earth fill at the top of the ERSP for the native plantings along the crown, and installation of the bedding material in the armor layer for the native plantings along the crown.

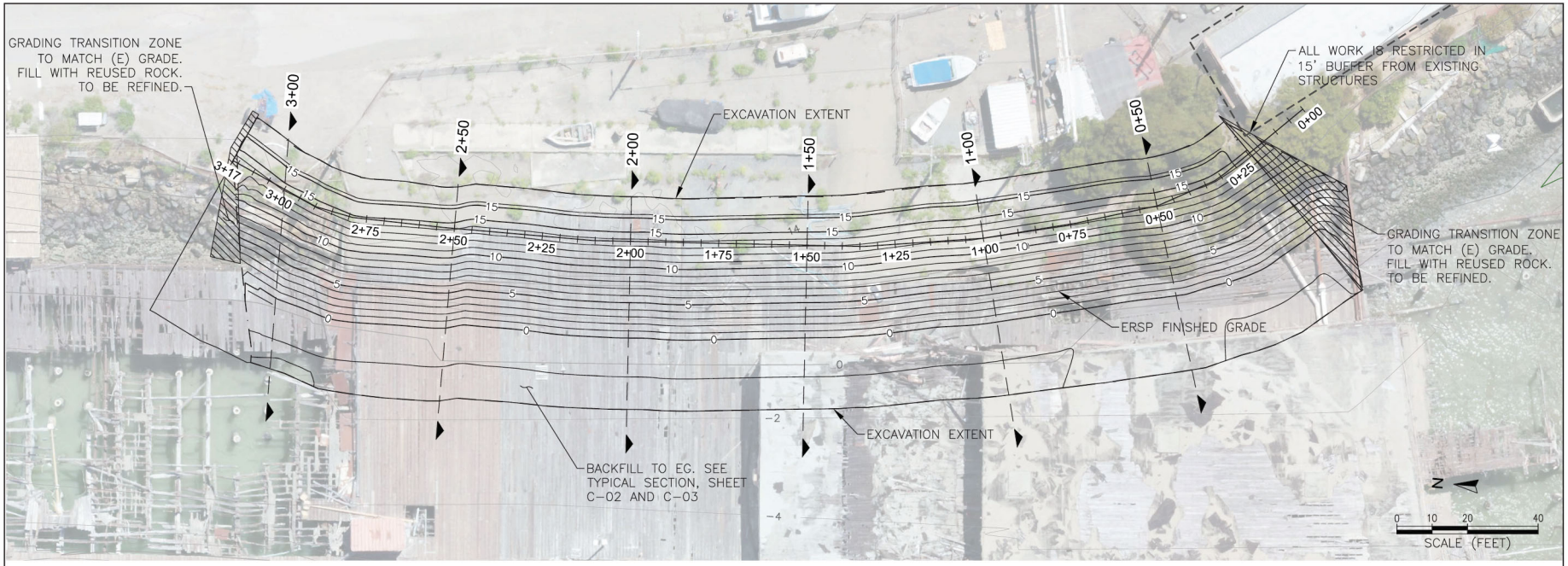
Enhanced Rock Slope Protection (ESRP)

The project includes a pilot approach to testing ecological enhancements at the top, armored face, and toe of the Rock Slope Protection (RSP). Typically, standard RSP installations are left as bare rock faces with large interstitial spaces between the rock riprap. This pilot approach would test whether shoreline RSP can be enhanced to provide subtidal, intertidal, and coastal bluff/upland transition zone habitat benefits. Proposed treatments, shown in plan-view and cross-section on Figures 2-5a and 2-5b, include the following:

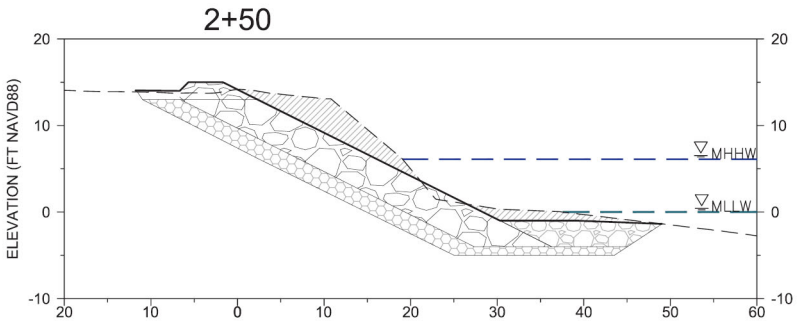
- **Living Crown.** The living crown would consist of native drought- and salt-tolerant plants of the Point San Pablo shoreline ecotone placed within the planting basin created along the landward edge of the ERSP, within the earth-filled voids between armor rocks. The intent is to allow for natural succession and evolution of native plant species at the crown of an RSP. Plant material would be sourced locally to preserve appropriate ecotone type and procured in small, deep containers typically preferred for habitat restoration applications. Vegetation proposed for the living crown includes:
  - Salt grass (*Distichlis spicata*)
  - California sagebrush (*Artemisia californica*)
  - Naked buckwheat (*Eriogonum nudum*)
  - alkali heath (*Frankenia salina*)

[16] Toilliez, Jean, PhD PE, and Quiroga, Pablo, PhD, Memorandum to State Coastal Conservancy: Terminal Four Removal Project – Summary of Findings on Shoreline Protection and Habitat Restoration (Subtask 1.3), November 30 2018.

[17] Caltrans Highway Design Manual, Chapter 880 – Shore Protection – Erosion Control.



ERSP DESIGN PLAN
PLAN VIEW



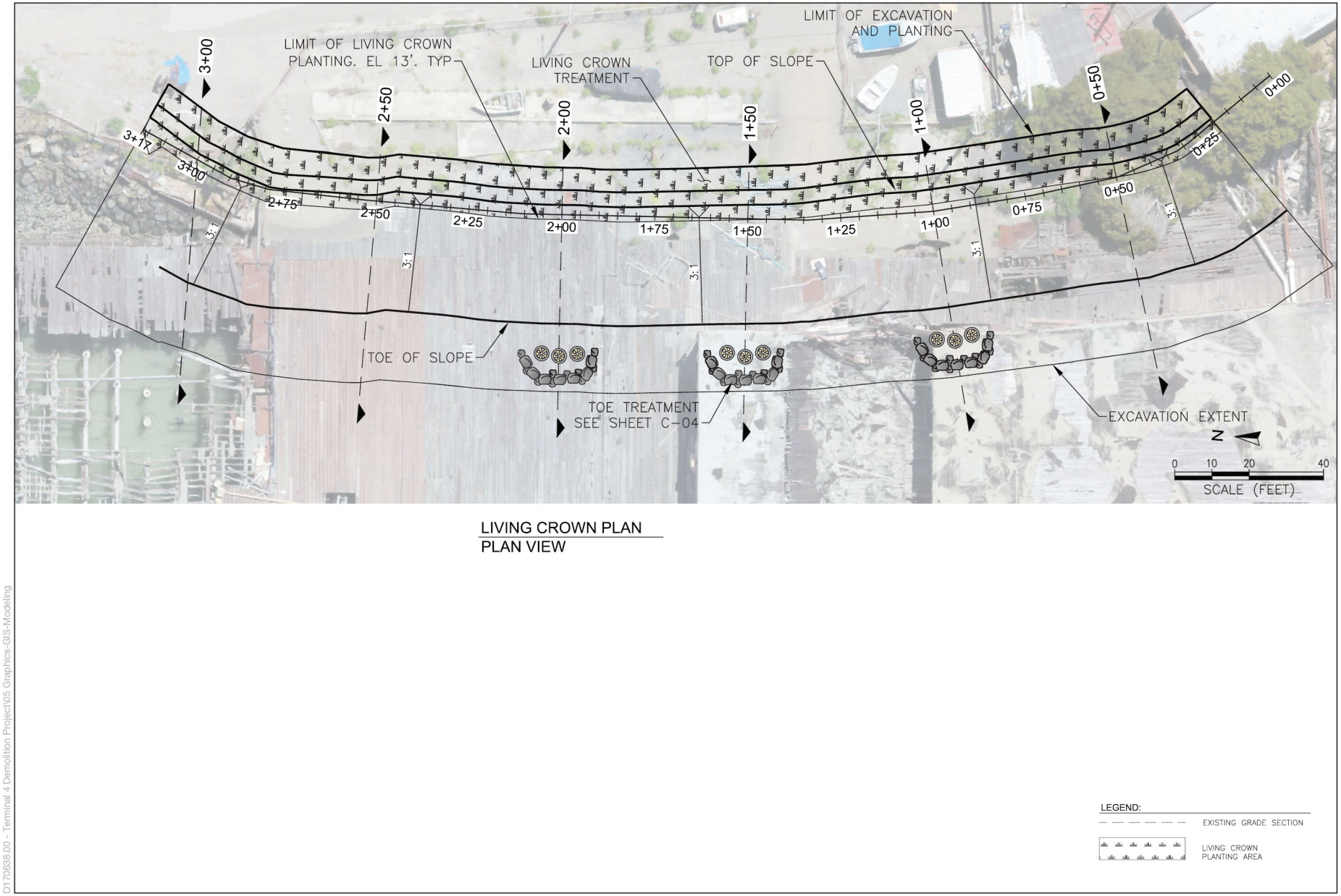
NOTES:
ESRP = Enhanced Rock Slope Protection
MHHW = Mean Higher High Water
MLLW = Mean Lower Low Water

LEGEND:
GRADING LIMIT
MHHW
EXISTING BUILDING, PIP
EXISTING STRUCTURE, TO BE DEMOLISHED
(E) CONTOUR LINE
DESIGN CONTOUR LINE
EXISTING RSP
BUFFER AREA
TRANSITION ZONE

SOURCE: ESA, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa County, California, sheets C-01 and C-02, June 2019.

Terminal Four Wharf, Warehouse, and Piling Removal Project

Figure 2-4
Enhanced Rock Slope Protection Design Grading and Typical Cross Section



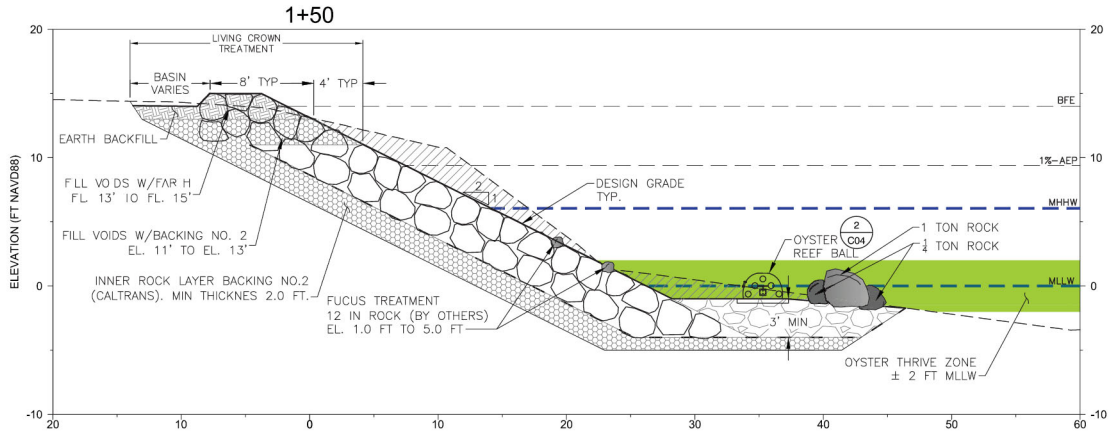
LIVING CROWN PLAN
PLAN VIEW

SOURCE: ESA, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa County, California, sheet L-01, June 2019.

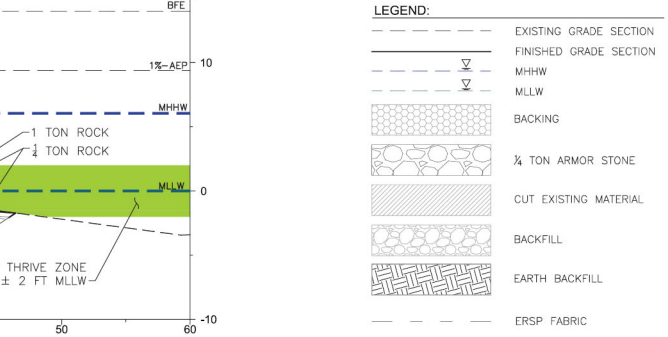
Terminal Four Wharf, Warehouse, and Piling Removal Project

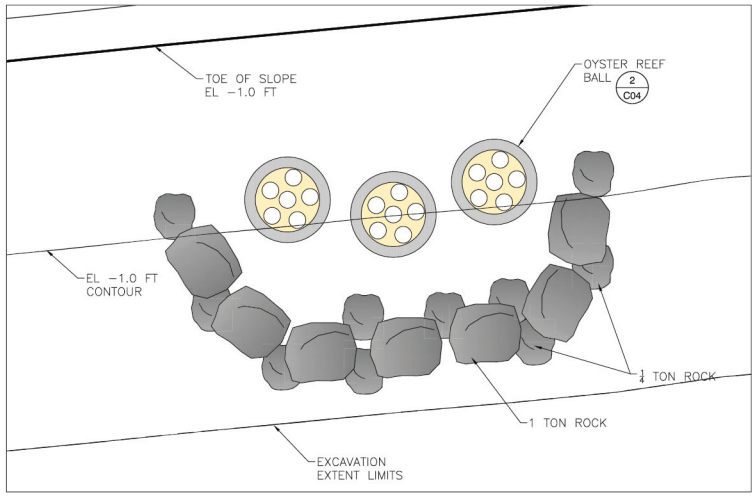
Figure 2-5a
Enhanced Rock Slope Protection Design Plan – Living Crown and Toe Treatment

ESA

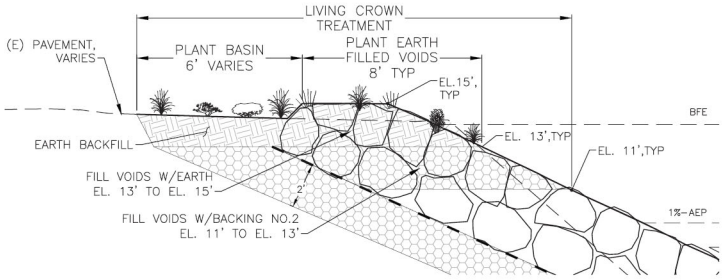


C C-04 ENHANCED ROCK SLOPE PROTECTION (ERSP) - STA 3+00
TYP. CROSS SECTION





1 C-04 LIVING TOE TREATMENT
PLAN VIEW



ERSP LIVING CROWN DETAIL
SECTION VIEW 1+50

NOTES:
MHHW = Mean Higher High Water
MLLW = Mean Lower Low Water

SOURCE: ESA, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa County, California, sheets C-04 and L-01, June 2019.

Terminal Four Wharf, Warehouse, and Piling Removal Project

Figure 2-5b
Enhanced Rock Slope Protection Design Plan – Living Crown and Toe Treatment

  - marsh gumplant (*Grindelia stricta var. angustifolia*)
  - California sea lavender (*Limonium californicum*)
  - Silver bush lupine (*Lupinus albifrons*)
  - Marsh jaumea (*Jaumea carnosa)*

- **Seaweed Treatment.** The seaweed treatment consists of installing seaweed transplants into interstitial gaps in the mid-slope of the ERSP. In accordance with requirements of the California Fish and Game Code (Section 1002), the contractor would collect from the adjacent shoreline rocks supporting the following seaweed species: rockweed (*Fucus distuchis*), feather boa kelp (*Egregia menziesii*), Turkish towel (*Gracillaria papillata),* or other native species. The seaweed-colonized rocks would then be placed into the ERSP armor matrix between elevations 1.0 feet and 5 feet.

- **Living Toe Treatment.** As shown on Figure 2-5b, the living toe treatment would consist of installing three artificial reef features at the toe of the ERSP to act as substrate for native Olympia oyster (*Ostrea lurida*) and other native invertebrate and native algal establishment. Each reef feature would consist of three oyster reef balls fabricated from "baycrete" (a mixture of native oyster shell and sand mined from the bay, mixed with cement and gravel), and protected from wave action by a U-shaped arrangement of rocks. Each oyster reef ball would be about three feet in diameter and two feet high, and embedded on a base. The base of each oyster reef ball would be installed at a design grade of -1 foot elevation.

The ERSP would require that the following quantities of material:

- Quarter-ton rock: 1,900 cubic yards
- Oyster reef balls: 300 cubic yards
- Reused rock fill: 400 cubic yards
- Backing rock fill: 1,100 cubic yards
- Filter fabric: 20,000 square feet

Approximately 3,660 cubic yards of spoils would be off-hauled for recycling or disposal in a landfill.

2.4.6 Schedule and Work Hours

Figure 2-6 depicts the construction schedule. The overall project schedule is approximately 6 months, 4 to 5 months of which would include in-water work. The pile and debris removal phase of the project is intended to take place between August 1 and November 30, consistent with regulatory guidance[18] and the construction window established by the National Marine Fisheries Service (NMFS) for the San Francisco Bay Creosote Removal and Pacific Herring Habitat Restoration Project implemented at the nearby Red Rock Warehouse site. The project construction schedule is subject to change due to permitting and regulatory constraints, seasonal weather conditions, tides and day-to-day winds. These conditions could require that the project be completed over two construction seasons instead of one season.

[18] U.S. Army Corps of Engineers (USACE), 2004. Framework for Assessment of Potential Effects of Dredging on Sensitive Fish Species in San Francisco Bay. Final Report August 5, 2004; and NMFS, 2016. Letter of Concurrence.

Construction Activity	Month of Construction					
	1	2	3	4	5	6
Mobilize, Install Turbidity Curtain						
Remove Fender System						
Remove Utilities						
Remove Deck						
Remove Piles						
Process Debris, Off-Haul						
Remove Dolphin						
Remove Bottom Debris						
Remove Perimeter Infrastructure[a]						
Install Enhanced Rock Slope Protection						
Remove Turbidity Curtain, Demobilize						

NOTES:

[a] Includes removal of fuel tanks.

SOURCE: COWI Marine, 60% Indirect Costs – Construction Timeline, September 2018.

Figure 2-6
Construction Schedule

Construction work hours for on-shore construction activities would be Monday through Friday from 8:00 a.m. to 5:00 p.m. Regarding in-water work, waterborne equipment could only be used in shallower areas during certain tide conditions, which could occur at any time, including at night (i.e., between the hours of 5:00 p.m. and 7:00 a.m.) or on weekends. For purposes of evaluation, it is assumed that in-water construction could occur at any hour. The specific schedule for night and weekend work would be submitted in advance for review and approval by the lead engineer and applicable jurisdictional permitting agencies.[19]

2.5 Construction Best Management Practices and Other Environmental Protection Measures

Demolition and construction activities would occur within and adjacent to sensitive subtidal resources, including eelgrass beds. The project designs include a number of construction BMPs to minimize impacts to the natural environment and the species within the limits of work and to avoid impacts to natural areas outside the limits of work.

These protection measures are included in the project's 60 percent design plans and specifications and would be passed on to the construction contractor as requirements. The measures include established BMPs for construction projects in marine environments and along shorelines, and reflect numerous regulatory agency-required processes and practices, as well as common measures to avoid or reduce project effects on the environment. Where impacts could be significant in the absence of these protection measures, the impact and the specific measure are evaluated in the relevant resource section of this document.

[19] Specification Section 01110 – Summary of Work, Subsection 1.10, Night and Weekend Work; Specification Section 02220 – Demolition, Subsection 1.07, Special Considerations.

2.5.1 Best Management Practices

The project design plans and specifications[20] include the following construction BMPs:

- **Debris Management.** The contractor will use the following BMPs to prevent hazardous waste release and minimize creosote release, sediment disturbance and total suspended solids generation during the demolition operations:
  - Install a floating surface boom to capture floating surface debris.
  - Slowly lift the pile from the sediment and through the water column.
  - Dispose of all removed piles, floating surface debris, and all containment supplies at a permitted upland disposal site that accepts creosote-treated wood and materials contaminated with creosote.
- **Air Quality.** The contractor will implement the following basic construction measures to minimize exhaust and dust emissions during the demolition operations:
  - When ground disturbing activities (e.g., grading) occur on dry land, unpaved and exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site will be covered.
  - During periods when ground disturbing activities (e.g., grading) occur on dry land, all visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads will be limited to 15 miles per hour.
  - Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points.
  - All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.
  - The SCC will direct the contractor to post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
- **Avoidance and Minimization of Impacts to Nesting Birds.** The contractor will implement the following measures to avoid and minimize the disturbance to nesting birds during the demolition operations:
  - Given that construction must occur during the bird nesting season (February 1–August 31), a biologist will conduct pre-construction nesting bird surveys within 14 days prior to the start of vegetation removal, demolition or construction activities.

[20] Refer to Technical Specifications Section 02220 – Demolition, Subsection 3.05, Best Management Practices.

  - If active bird nests are found, the biologist will establish no-construction buffer zones around active bird nests to avoid or minimize impacts to the active nest. The no-disturbance zone will be marked with flagging or fencing that is easily identified by the construction crew and will not affect the nesting bird. The minimum buffer zone widths will be as follows: 20–25 feet (radius) for non-raptor ground-nesting species; 50 feet (radius) for non-raptor shrub- and tree-nesting species; and 500 feet (radius) for raptor species. Buffers will remain in place as long as the nest is active or young remain in the area and are dependent on the nest.
  - In coordination with the USFWS, the agency-approved biologist my decrease the no-disturbance buffer zone while monitoring the active nest until the biologist confirms that project activities do not cause changes in nesting bird behavior that could result in nest failure.
  - If any bird species initiate nests within the established buffer distances while construction is happening, then it is assumed that they are habituated to the construction activities, and construction can continue as long as the birds or their nests are not physically harmed.

- **Bio-fouling.** The contractor will implement the following BMPs for ballast water management and biofouling removal to reduce the potential for introducing aquatic invasive species:
  - Vessels over 300 gross tons in size will be regulated under the State's Marine Invasive Species Program.
  - The contractor will keep a hazardous materials inventory for all hazardous materials to be stored, used, or transported for the project in, on, or around the wharf, work barges, and the contractor's staging area. A current inventory will be kept on site at all times and will include the name of the material, the type, capacity, number and location of storage containers, type of hazard (pressure release, fire, explosion, asphyxiation, toxicity, bioaccumulation, etc.), and the maximum storage capacity at each location.
  - Prior to the demolition work, a Hazardous Material Management Plan will be prepared to include will include specific methods for control and containment of hazardous materials identified in the hazardous material inventories from demolition through disposal. Emergency contacts will be listed for use in the event of a release of hazardous materials.
- **Treated Wood Waste Management.** The contractor will implement the following BMPs for handling creosote-containing materials, spill prevention and containment, erosion and sedimentation prevention, and monitoring requirements:
  - During demolition activities, a floating boom and turbidity curtain will be deployed around the work face and absorbent booms and pads will be provided on marine vessels on site.
  - The contractor will demonstrate that BMPs are implemented to prevent accidental leakage, spill, or transfer of contaminated material in the water column once transferred onto the scow barges.
  - Within upland areas, the contractor will implement silt fences, straw wattles, and other measures determined appropriate for erosion and sediment control.
  - Waste, such as discarded demolition materials, chemicals, litter, and sanitary waste at the demolition site will be properly controlled.

  - Vessel fueling will be required at the contractor's staging areas or at an approved docking facility.
  - Marine vessels generally will contain petroleum products within tankage that is internal to the hulls of the vessels. All deck equipment will be equipped with drip pans to contain leaks and spills. All fuels and lubricants aboard the work vessels will have a double containment system. Chemicals used within the project area and on marine vessels will be stored using secondary containment.

- **Barge Operations, Work Surface, Containment.** The contractor will load removed piles onto a barge and transport the piles to the staging area, where the concrete will be separated from the other materials and recycled or disposed of offsite as appropriate at a permitted facility.

  The barge will be designed to prohibit sediment or debris from falling back into the water. The work surface on the barge deck will include a containment basin for creosote, piles, concrete, and any mud or sediment removed during pulling. Upon removal from substrate, the piles will be moved expeditiously from the water into the containment basin. Any sediment accumulated from the pile removal operations will be assumed to contain creosote and will be contained and disposed offsite in an appropriate landfill.

  - Work surfaces on a barge deck or pier will include a containment basin for pile and any sediment removed during pulling.
    - Work surfaces on a barge deck will be cleaned by disposing of sediment or other residues along with cut off piling, if so employed.
    - The containment basin will be removed and disposed in accordance with applicable federal and state regulations.
    - Upon removal from substrate, the pile will be moved expeditiously from the water into the containment basin. The pile will not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.

- **Disposal of Piling, Sediment and Construction Residue.**
  - The contractor will place pulled piles in a containment basin to capture any adhering sediment immediately after the pile is removed from the water.
    - Utilize basin set up on the barge deck.
  - Cut up pilings, sediments, construction residue and plastic sheeting from the containment basin will be packed into a container and disposed of at approved solid waste disposal facility in a timely manner.

- **Debris capture in water**
  - A floating surface boom will be installed to capture floating surface debris. Debris will be collected and disposed of along with cut off pilings, if so employed.
  - The floating surface boom will be equipped with absorbent pads to contain any oil sheens. Absorbent pads will be disposed as described in these specifications section.

- **Resuspension/Turbidity**
  - Crane operator will be trained to remove pile from sediment slowly.

  - Sediments spilled on the work surfaces of barges will be contained and disposed of with the pile debris at permitted upland disposal site.
  - Holes in the bay floor remaining after piling removal will not be filled (holes will not persist under sedimentation processes).

2.5.2 Turbidity and Light Level Management

The project design plans and specifications[21] include the following requirements regarding turbidity and light levels to limit adverse effects on subtidal resources including eelgrass:

- **Baseline Conditions.** The contractor will monitor turbidity and light levels in the eelgrass beds prior to demolition and construction to establish baseline conditions. Turbidity and light will be monitored near the project work area at low, middle, and high tide during typical work hours prior to construction at monitoring locations approved by SCC.
- **Performance Criteria.** The proposed performance criteria for light levels (Hsat) is a minimum of five hours per day. The proposed performance standard for turbidity is not more than 10 percent above background levels. Monitoring equipment and methods must be approved by SCC.
- **Monitoring During Pile Removal.** The contractor will monitor turbidity and light levels within the project work area during pile removal. If levels exceed specified performance standards, demolition activities will stop until conditions improve.
- **Turbidity Control Plan, Turbidity Curtain Deployment.** The contractor will prepare a turbidity control plan for demolition activities, and will install and maintain a turbidity curtain to manage turbidity, resuspended sediment, and floating debris. Refer to Figures 2-2 and 2-3 for turbidity control areas (i.e., the locations where turbidity curtains will be deployed). The turbidity curtains will be heavy duty and suitable for the marine environment[22], full-length in shallow water areas (less than 10 feet), and long enough to prevent the migration of floating debris in deep areas (greater than 10 feet).

2.5.3 Construction Monitoring – Water Quality

The project design plans and specifications[23] include the following requirements regarding construction monitoring for water quality (in addition to recording daily observations of construction work):

- **Reporting, Daily Observations and Work Progress.** The contractor shall conduct daily inspections of the water outside of containment silt curtains, if they are deployed, to ensure that discharge of construction sediments or materials do not cause the following conditions:
  - Floating, suspended, or deposited macroscopic particulate matter or foams;

[21] Refer to Technical Specifications Section 02220 – Demolition, Subsection 1.03, Submittals, and Section 01140 – Environmental Requirements, Subsection 3.01, Turbidity and Light Level Monitoring.

[22] The turbidity curtains will be expected to meet US Army Corps of Engineers' requirements (i.e., "Type 3" as specified in US Army Corps of Engineers; (1997) EP 110-2-16-BMP-27).

[23] Refer to Technical Specifications Section 01140 – Environmental Requirements, Subsection 1.04, Construction Monitoring.

  - Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
  - Visible, floating, suspended, or deposited oil or other products of petroleum origin; and
  - Toxic or other deleterious substances to be present in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, either at levels created in the receiving waters or as a result of biological concentration.

- **Water Quality Monitoring and Reporting.** Contractor shall conduct daily water quality monitoring (described below) in all areas where construction activities have the potential to affect water quality. The contractor will notify the lead engineer immediately if any exceedances of the permit limits are noted.
- **Barge Operations, Work Surface, Containment.** The contractor will load removed piles onto a barge and transport the piles to the staging area, where the concrete will be separated from the other materials and recycled or disposed of offsite as appropriate at a permitted facility.

  The barge will be designed to prohibit sediment or debris from falling back into the water. The work surface on the barge deck will include a containment basin for piles, concrete, and any mud or sediment removed during pulling. Upon removal from substrate, the piles will be moved expeditiously from the water into the containment basin. Any sediment accumulated from the pile removal operations will be assumed to contain creosote and will be contained and eventually tested and disposed offsite in an appropriate landfill.

  - Minimize barge grounding within project areas over eelgrass beds.
  - Work surface on barge deck or pier will include a containment basin for pile and any sediment removed during pulling.
    - Work surface on barge deck and adjacent pier will be cleaned by disposing of sediment or other residues along with cut off piling rather than washing such materials overboard.
    - Containment basin will be removed and disposed in accordance with applicable federal and state regulations.
    - Upon removal from substrate the pile will be moved expeditiously from the water into the containment basin. The pile will not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.

2.5.4 Construction Crew Training

It is common practice in most types of construction projects, and especially for in-bay construction projects, to conduct training sessions for the construction crews to orient them to the project work areas and to ensure that they are familiar with environmental and regulatory requirements as wells as pertinent safety measures. The project specifications[24] require that prior to construction, a qualified biologist will prepare a worker environmental awareness training. The

[24] Refer to Technical Specifications Section 01140 – Environmental Requirements, Subsection 1.05, Listed Species at the Project Site.

training will be distributed to the construction contractor to ensure a copy is available to all construction workers on-site. Implementation of the training will include the following:

- Before any work occurs, the contractor's field staff will attend a mandatory environmental-education training for construction personnel. A qualified biologist will provide the worker environmental awareness training to field management and construction personnel. Minimum qualifications for a qualified biologist will be a four-year college degree in biology or related field and demonstrated experience with the species of concern.

- The training will cover all of the sensitive biological resources that are present on-site (e.g., osprey, burrowing owl, other species protected by the Migratory Bird Act, green sturgeon, longfin smelt, Chinook salmon, steelhead, western bumblebee, Suisun marsh aster, and sensitive habitats to be avoided, such as wetlands). That training will include a description, representative photographs, and the legal status of each of species; terms and conditions of the permits; and the penalties for not complying with biological conservation measures. The training will include the following requirements: 1) If a listed wildlife species is discovered, construction activities will not begin in the immediate vicinity of the individual until CDFW is contacted and the individual has been allowed to leave the construction area; and 2) Any special-status species observed during surveys will be reported to CDFW so the observations can be added to the CNDDB.

- The program will cover restrictions and guidelines that must be followed by all construction personnel to avoid or reduce effects on sensitive biological resources during project implementation. All of the contractor's or subcontractor's construction workers will be required to receive training, and when new workers are added to the crew, they will receive the training before being allowed to work on-site. A sign-in sheet of those contractor individuals who have received the training will be maintained by the contractor.

2.5.5 Eelgrass Survey and Protection

Demolition and construction work is proposed within and adjacent to sensitive subtidal resources, including eelgrass beds **(**refer to Figure 2-3). In 2014, NMFS developed the California Eelgrass Mitigation Policy and Implementation Guidelines to ensure no net loss of eelgrass habitat function occurs within California. Contained within that document are guidelines for pre- and post-project surveys, avoidance and minimization measures to implement during construction, and mitigation options for unavoidable impacts to eelgrass habitat. The project design plans and specifications[25] include the following requirements consistent with the NMFS guidance referenced above to minimize impacts to eelgrass within the project work area, and to avoid impacts to eelgrass outside of the project work area:

- **Survey, Boundary Marking.** Eelgrass beds will be surveyed with side-scan sonar during the growing season (April to October) prior to the start of in-water construction. The boundaries between areas of eelgrass to be avoided and the project work area will be marked prior to construction with temporary navigation buoys. To the extent feasible, the presence of work equipment (e.g., barges, skiff, etc.) within the area(s) marked by the buoys will be prohibited.

[25] Refer to Technical Specifications Section 01140 – Environmental Requirements, Subsection 1.06, Eelgrass Survey and Protection.

- **Biologist Inspection, Monitoring.** A biologist will be on-site during all marine construction activities to monitor the eelgrass beds and ensure that the impacts are minimized as much as possible during construction.
- **Turbidity Management.** The turbidity monitoring and controls described in Section 2.5.2 are intended in part to protect eelgrass outside of the project work area.
- **Post-Construction Surveys and Mitigation.** Eelgrass beds will be re-surveyed at the completion of the 5-year post-construction monitoring period to assess the direct and indirect effects of the project. If a net reduction in eelgrass extent is observed relative to the pre-project condition, the SCC will develop a mitigation plan consistent with NMFS Eelgrass Mitigation guidance.

2.5.6 Hazardous Materials Management

Potential hazardous materials are present at the site including lead paint, creosote-treated wood waste, tar and hydrocarbons, and asbestos. The contractor will abide by all federal and state regulations regarding the handling, processing, hauling, and disposal of such hazardous materials. The project design plans and specifications[26] include the following guidelines for a Hazardous Material Management Plan, which will include, but not be limited to the following:

- A hazardous materials inventory that identifies the type, location, estimated quantity and nature of each potentially hazardous material located at the wharf.
- Treated wood waste constitutes hazardous material and will be disposed according to permit conditions and applicable laws.
- Equipment containing other hazardous materials, such as switches and gauges that contain mercury, will be tagged prior to removal for special handling to prevent an inadvertent discharge on the deck surfaces or into Bay waters.
- If hazardous materials are identified, a specialty abatement contractor will be acquired to mitigate these issues in compliance with State and Federal regulations prior to the general demolition of the wharf.
- Any hazardous materials brought to the Project site, e.g., diesel oil or paints, will also be included in the Hazardous Material Management Plan.

Refer also to Section 3.02, Contractor-Generated Hazardous Wastes/Excess Hazardous Materials in Specification Section 01140 – Environmental Requirements, regarding requirements for proper handling of contractor-generated hazardous waste.

2.6 Operation and Maintenance

Since this project involves demolition and removal of a derelict structure, there would be no true operations or maintenance. Annual monitoring for up to 5 years may occur as required by permits and approvals. Potential monitoring could include:

[26] Refer to Technical Specifications Section 02220 – Demolition, Subsections 1.03, Submittals, and 1.07, Special Considerations.

- Monitoring the effectiveness of the ERSP in resisting erosion or scour in the section of shoreline it is intended to protect. Performance standards for this protection are relative to the protection provided by the existing and rip-rap and concrete.
- Monitoring the establishment of the ecologically enhanced treatments being implemented as pilot projects, if needed: the living crown, seaweed treatment, and living toe.

Monitoring actions might include periodic inspections (e.g., one vehicle trip per year).

2.7 Required Permits and Approvals

As the lead agency and the primary project proponent, the SCC has principal responsibility for approving and carrying out the project and for ensuring the requirements of CEQA and all other applicable regulations are met. Other federal, state, and regional agencies that would have permitting approval or review authority over portions of the project are listed below.

- U.S. Army Corps of Engineers – Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act.
- San Francisco Regional Water Quality Control Board – Clean Water Act Section 401 Water Quality Certification/Waste Discharge Requirements under the Porter-Cologne Water Quality Control Act.
- NMFS – Federal Endangered Species Act Section 7 consultation under the Endangered Species Act and Essential Fish Habitat consultation under the Magnuson Stevens Fishery Conservation and Management Act and Fish and Wildlife Conservation Act.
- BCDC – Administrative Permit under the McAteer-Petris Act.
- State Historic Preservation Office – Section 106 compliance under the National Historic Preservation Act.
- City of Richmond – Demolition Permit

CHAPTER 3
Initial Study

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial study:

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

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

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

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

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

March 6, 2020
Date

3.2 Environmental Checklist

3.2.1 Aesthetics

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☒	☐	☐

Discussion

a) **Less than Significant.** For purposes of this evaluation, scenic vistas include broad, expansive, publicly-accessible views in the project area. This criterion applies to projects that would be located on, or disrupt access to a scenic vista, or result in visual changes within its viewshed. Scenic vistas may be officially recognized or designated (e.g., within local planning documents or the California Department of Transportation [Caltrans] scenic highway program), or they may be informal in nature (e.g., mountain peaks or coastal bluffs). The project's effect would be considered substantial if it would appreciably damage or remove the visual qualities that make the view unique, unobstructed, and/or exemplary.

According to the *Richmond General Plan 2030*, the San Francisco and San Pablo Bays, as well as the hills surrounding the city of Richmond are scenic areas that "remain prominent character-defining resources, contributing to the community's image and identity with beautiful scenic backdrops, environmental sanctuaries and recreational opportunities."[1] While views of the Bay from the project site may be scenic, the project site is not publicly accessible and views of the site from publicly accessible locations are very limited. The Richmond-San Rafael Bridge is about 2 miles away from the project site. The project site is not readily distinguishable in views available from bridge's bike/pedestrian path, and less noticeable from eastbound vehicles crossing the bridge. As described in the Project Description, project activities at the site would not require the erection of structures with the ability to block views of any kind. For these reasons,

[1] City of Richmond, *Richmond General Plan 2030*, Element 7 – Conservation Natural Resources and Open Space, April 25, 2012.

impacts related to substantial adverse effects on a scenic vista would be less than significant.

b) **No Impact.** The State Scenic Highway System includes highways that either are eligible for designation as scenic highways or that have been designated as such. The closest highways to Terminal Four that are part of the State Scenic Highway System are State Route (SR) 1 and portions of SR 37 and SR 101 in Marin County.[2] All three are designated as Eligible State Scenic Highways. Terminal Four is located approximately 10 miles southeast of the portions of SR 37 and SR 101 that are Eligible State Scenic Highways and approximately 7.5 miles north of SR 1. The project area is not visible from any of these Eligible State Scenic Highway segments.

Since project activities would not introduce components with the ability to block views of any kind and are not located within or near any eligible or designated State Scenic Highway segment, no impact to scenic resources within a scenic highway would occur.

c) **Less than Significant.** Although much of the city of Richmond is urbanized, Point San Pablo (including Terminal Four) is in a non-urbanized area.[3] The project site is located primarily within the San Francisco Bay and consists of the remains of a wharf, warehouse, and associated pilings.

As stated in the Project Description, most demolition and pile removal is anticipated to be marine-based via barge. Barges, excavators, and other equipment would be used to demolish and remove the deck, piles, utilities, warehouse, concrete debris, and Bay floor debris. Land-based excavators and other equipment would be used to remove structures on land and during development of the enhance rock slope protection. Construction is expected to take approximately 6 months. Equipment and debris would not be permanently stored on site, making any potential degradation of the existing visual character or quality of public views of the site temporary.

There are no publicly available views of the site from land: Terminal Four is closed to the public for safety reasons and the intervening topography shields the site from publicly accessible views from the landward direction. The nearest navigational channel, used by local ferry service and other vessel traffic, is located approximately 0.1 mile immediately west of the site. The site is visible to the public from boats on the Bay, and viewers from these vessels could notice the loss of the derelict structures which, in addition to the enhanced shoreline, would be the permanent change to the visual character of the site. While some public viewers may have an appreciation for derelict structure and/or enjoy seeing birds roosting on them (and thus may see the removal of the structures as a negative aesthetic change), the removal of the structures would return the area to a more natural state, thus enhancing views of the Bay shoreline. On the whole, the project would

[2] Caltrans, 2019. Scenic Highways, List of eligible and officially designated State Scenic Highways. Available online at https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed on October 23, 2019.

[3] United States Census Bureau, 2010 Census – Urbanized Area Reference Map: San Francisco – Oakland, CA, March 11, 2012.

not substantially degrade the existing visual character of public views of the site, and the impact would be less than significant.

d) **Less than Significant with Mitigation.** As described in the Project Description, portions of work in the tidal zone may require intermittent nighttime construction work (i.e., between the hours of 5:00 p.m. and 7:00 a.m.), which would require lighting at the working face. Construction-related lighting would occur intermittently during the six-month construction period. There is no public access to the project site, and the intervening topography shields the site from publicly accessible views from the landward direction. The nearest receptor that could be adversely affected by construction lighting is the East Brother Light Station, a Victorian-era lighthouse that also serves as a bed and breakfast inn, located approximately 1,000 feet to the west. To ensure that nighttime lighting does not adversely affect receptors at the East Brother Light Station, SCC would implement **Mitigation Measure AES-1**, Construction Lighting.

After demolition and construction activities are complete, there would be no operations-related lighting. For these reasons, the project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area, and the impact would be less than significant.

> **Mitigation Measure AES-1: Construction Lighting.** SCC will require the contractor to direct nighttime lighting used during construction toward the work face and away from the East Brother Light Station to the extent possible.

3.2.2 Agriculture and Forestry Resources

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

Discussion

a) **No Impact.** The project site is not on land that is designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance according to the California Department of Conservation California Important Farmland Finder map, but is on land that is designated as Urban and Build-Up Land.[4] Therefore, implementation of the project would not convert land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, and there would be no impact.

b) **No Impact.** The project site is designated by the Richmond General Plan 2030 and zoned under the City of Richmond Zoning Ordinance as Open Space.[5] The project site is not on land that is under a Williamson Act contract.[6] A Williamson Act contract allows local governments to enter into contracts with private landowners in order to restrict specific

4 California Department of Conservation (CDC), California Important Farmland Finder, 2016. Available online at https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed on July 25, 2019.

5 City of Richmond, Richmond General Plan 2030, Element 7 – Conservation Natural Resources and Open Space, April 25, 2012.

6 Contra Costa County Department of Conservation and Development, 2016 Agricultural Preserves Map, Contra Costa County, California, February 1, 2017.

parcels of land for the use of open space or agriculture. Consequently, the project would not conflict with existing zoning for agricultural use, or with a Williamson Act contract, and there would be no impact.

c, d) **No Impact.** As indicated above, the project site is designated by the Richmond General Plan 2030 and zoned under the City of Richmond Zoning Ordinance as Open Space.[7] The project site is not located within any land zoned as forest land, timberland, or land zoned Timberland Production by the City of Richmond or any other jurisdiction, nor is there any forest land in the project area. Implementation of the project would not result in the loss of forest land or conversion of forest land to non-forest land use; therefore, there would be no impact.

e) **No Impact.** For reasons stated above, the project would not result in changes that could result in the conversion of Farmland to non-agricultural use or conversion of forest to non-forest use and no such impact would occur.

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7 City of Richmond, Richmond General Plan 2030, Element 7 – Conservation Natural Resources and Open Space, April 25, 2012.

3.2.3 Air Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
III. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Discussion

a) **Less than Significant.** Air pollutant emissions associated with the project would only occur during demolition and construction activities. Upon completion of these activities, the project would not generate any air pollutants. Therefore, this impact analysis only assesses construction-related air quality impacts.

The Bay Area Air Quality Management District (BAAQMD) adopted the 2017 Clean Air Plan on April 19, 2017.[8] The 2017 Clean Air Plan updates the Bay Area 2010 Ozone Strategy in accordance with the requirements of the California Clean Air Act (CCAA) to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases in a single, integrated plan; and establish emission control measures to be adopted or implemented. The 2017 Clean Air Plan contains the following primary goals:

- Protect public health; and
- Protect the climate.

The 2017 Clean Air Plan represents the most current applicable air quality plan for the San Francisco Bay Area Air Basin. Consistency with this plan is the basis for determining whether the project would conflict with or obstruct implementation of air quality plans.

8 BAAQMD, *Bay Area 2017 Clean Air Plan*, 2017. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en. Accessed September 4, 2018.

The thresholds of significance in the BAAQMD 2017 CEQA Air Quality Guidelines were established to be consistent with the air quality attainment plans.[9] As described in discussion (b), with mitigation, emissions from project construction would not exceed the thresholds of significance, and would therefore be consistent with the applicable plans. The project would not conflict with or obstruct the implementation of the applicable air quality plans, and the impact would be less than significant.

b) **Less than Significant with Mitigation.** Demolition and construction activities would result in emissions of ozone precursors and criteria pollutants from the operation of off-road construction equipment (listed in Table 2-2 in the Project Description) and vehicle exhaust from vehicles transporting workers, construction materials and debris. In addition, water-based sources such as tugboats used to steer barges and work skiffs also produce air pollutants. Criteria pollutant emissions from off-road demolition and construction equipment as well as worker and truck trips were estimated using the most recent version of the California Emissions Estimator Model (CalEEMod version 2016.3.2) using data on construction schedule and phasing, types and number of construction equipment used in each phase, and truck trips generated based on material and debris volumes estimated to be transported. Based on estimates of potential debris volumes that may need to be removed from the site, this analysis assumes that pile removal would require approximately 18 barge trips from the project site to the Port of Richmond's Terminal 3 sorting facility, the Port of San Francisco's Pier 96, or another facility determined by the contractor, and approximately 350 truck trips from Terminal 3 or Pier 96 to one of the four planned disposal sites (assumed to be Potrero Hills Landfill in Suisun City for this analysis). In addition, approximately 230 haul truck trips would be needed to transport spoils from the project site (again, the assumed disposal site is the Potrero Hills Landfill) and approximately 330 truck trips to transport ESRP construction materials to the project site (refer to Table 2-3 for average and peak daily truck trips). The analysis assumes a one-way trip length of 39 miles from the Port of Richmond to the Potrero Landfill and 46 miles from the project site to the Potrero Landfill. CalEEMod default trip lengths for Contra Costa County were assumed for other hauling trips.

Emissions from tugboats that would steer barges and work skiffs were estimated using marine diesel and gasoline engine emission factors, respectively, from the U.S. Environmental Protection Agency (U.S. EPA). Details of the calculations, including construction schedule and phases, equipment types and numbers used in each construction phase, worker vehicle and truck trips, number of working days, etc., are presented in **Appendix B**. The average daily emissions were calculated by adding the emissions from all the construction phases and dividing the total by the number of construction workdays (after taking into account any overlapping of phases). **Table 3-1** presents estimated project construction emissions.

9 BAAQMD, *California Environmental Quality Act: Air Quality Guidelines*, 2017. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed on September 4, 2018.

TABLE 3-1
DEBRIS REMOVAL ACTIVITIES EMISSIONS[a]

Source	Average Daily Emissions (pounds/day)			
	ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Off-road Construction Equipment - Unmitigated[b]	4.8	47.5	2.0	1.9
Work skiffs – Gasoline engines[c]	6.1	10.1	0.1	0.1
Tugboats – Tier 4F Diesel Engines[d]	0.8	7.7	0.2	0.2
Total Average Daily Emissions	**11.7**	**64.3**	**2.3**	**2.2**
BAAQMD Average Daily Significance Thresholds	54	54	82	54
Significant?	No	**Yes**	No	No
Off-road Construction Equipment – Tier 4 Engines	1.2	12.2	0.1	0.1
Work skiffs – Gasoline Engines	6.1	10.1	0.1	0.1
Tugboats – Diesel Tier 4F Engines	0.8	7.7	0.2	0.2
Total Average Daily Emissions	**8.1**	**30.0**	**0.4**	**0.4**
BAAQMD Average Daily Significance Thresholds	54	54	82	54
Significant?	No	No	No	No

NOTES:
[a] For purposes of modeling, emissions were assumed to occur over a total of 5 months from August 2020 to early January 2021 (110 workdays), although the construction start date has not yet been determined.
[b] Emissions were calculated using CalEEMod assuming 8 hours per day of activity for each equipment listed under each phase.
[c] Assumes 8 hours of operation per day. Total hours were calculated as the total sum of the product of the number of work skiffs used in each construction phase and the number of workdays in that phase times 8 hours per day.
[d] Emissions assume engines meeting Tier 4 Final standards.

ROG = reactive organic gases
NOx = oxides of nitrogen
PM_{10} = particulate matter 10 micrometers in diameter or smaller
$PM_{2.5}$ = particulate matter 2.5 micrometers in diameter or smaller

The project's emissions were evaluated against the thresholds of significance included in the BAAQMD's 2017 CEQA Air Quality Guidelines.[10] As shown in Table 3-1, average daily emissions from debris removal activities would exceed the BAAQMD significance thresholds. This unmitigated scenario assumes no emission controls from off-road equipment (e.g., back hoes, excavators and cranes; see Table 2-2 in Chapter2). However, based on information that Tier 4 engines (i.e., engines meeting the U.S. EPA's Tier 4 Final standards) were already in use for tugboats, emission factors for tugboats reflect this standard. Implementation of **Mitigation Measure AQ-1** would reduce emissions to a less-than-significant level by requiring that all off-road construction equipment also be equipped with engines meeting the U.S. EPA's Tier 4 Final standards. Table 3-1 shows these mitigated emissions.

[10] BAAQMD, *California Environmental Quality Act: Air Quality Guidelines*, 2017. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed on September 4, 2018.

BAAQMD has not developed quantitative mass emissions thresholds for fugitive dust emissions of particulate matter from earthmoving activities, but instead recommends implementation of Best Management Practices (BMPs), such as those listed as Basic Construction Mitigation Measures Recommended for All Proposed Projects in BAAQMD's 2017 CEQA Air Guidelines, to reduce fugitive dust emissions. Project activities would primarily occur along a portion of the San Francisco Bay shoreline and would not involve intense earthmoving activities on dry land. As such, fugitive dust emissions would be minimal. Nevertheless, all landside activities with the potential for ground disturbance will be subject to the best management practices for air quality described in Section 2.5.1 of the Project Description, which are based on BAAQMD recommended dust control measures to ensure that significant impacts related to dust would be avoided.

With mitigation and implementation of the referenced best management practices, project emissions would not exceed BAAQMD significance thresholds and adequate fugitive dust reduction measures would be implemented consistent with BAAQMD's BMPs, and potential impacts related to the project's individual emissions would be reduced to less than significant.

In developing the thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts on the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. As described above, project construction emissions would not be anticipated to exceed BAAQMD significance thresholds with the implementation of Mitigation Measure AQ-1 in addition to the best management practices for air quality described in Section 2.5.1. Therefore, the project would result in a less-than-significant cumulative impact with mitigation.

> **Mitigation Measure AQ-1: Construction Equipment Diesel Emissions Control.** All heavy-duty off-road equipment used for construction activities shall be equipped with the most effective Verified Diesel Emissions Control Strategies (VDECS) available for the engine type. In this case, the best available VDECS would be implementation of Tier 4F engines as certified by California Air Resources Board and U.S. EPA. The equipment shall be properly maintained and tuned in accordance with manufacturers specifications.

c) **Less than Significant.** The project site is located in an area that mostly consists of former industrial structures. In the vicinity of the site, there are no private residences located along the shoreline of Point San Pablo. Construction and demolition activities would result in on-site emissions of toxic air contaminants (TACs), specifically diesel particulate matter, from heavy duty diesel equipment exhaust. Due to the variable nature of construction activity, the generation of TAC emissions would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial

concentrations. The Office of Environmental Health and Hazard Assessment considers sources of TACs operating within 1,000 feet of receptors to potentially have impacts and therefore requires that a health risk assessment be conducted. Because the project site is located more than 1,000 feet from the nearest receptors, construction activities would be sporadic and short-term in nature, and construction TAC emissions would cease after the completion of project construction, health impacts from these emissions would be less than significant.

d) **Less than Significant.** Typical odor sources of concern include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee roasting facilities. The project would not include any of these types of facilities or operations, and would therefore not result in a new source of substantial odors. In addition, the project would not introduce any new receptors who might be exposed to any existing sources of odor. Diesel combustion in construction equipment, marine vessels and on-road trucks used for project construction would generate some odors; however, construction-related odors would be temporary and would not persist upon project completion. These odors would disperse quickly and given the large distances separating the project site from the nearest receptors, would not affect any sensitive receptors. Therefore, the project would not create a significant source of new odors, and odor impacts would be less than significant.

3.2.4 Biological Resources

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

Discussion

This section describes the existing terrestrial and aquatic biological resources within the vicinity of the project site. The potential for the study area to support special-status plant or wildlife species[11] was assessed based on an Environmental Science Associates' site visit on May 24, 2018, a desktop review of historic and current aerial imagery, biological resource databases such as the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS) Rare Plant Inventory,[12] and the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC),[13] as well as publicly

[11] The term "special-status species" refers to plant and wildlife species that are considered sufficiently rare that they require special consideration and/or protection and should be, or currently are, listed as rare, threatened or endangered by the federal and/or state governments. Such species are legally protected under the federal and/or State Endangered Species Acts or other regulations, or are species that are considered sufficiently rare by the regulatory and scientific community to qualify for protection. Refer to the designations in Table BIO-1 in Appendix C for more information on species designations.

[12] California Native Plant Society (CNPS), 2019. California Native Plant Society, Rare Plant Program, Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39) query for USGS 7.5-minute topographic quadrangle of San Quentin, Novato, Petaluma Point, Mare Island, San Rafael, Richmond, Point Bonita, San Francisco North, Oakland West. November 10, 2019.

[13] USFWS, 2019. USFWS Information for Planning and Consultation (IPaC). List of threatened and endangered species that may occur in the proposed project location, and/or may be affected by the project. November 10, 2019.

available citizen science data. The results of these queries formed the basis for analysis of special-status species with the potential to occur (PTO) in the project vicinity, their general habitat requirements, and the likelihood that they would occur in the study area. This information is summarized in Table BIO-1, Figure BIO-1, and Figure BIO-2 in **Appendix C**.

Special-Status Wildlife

The study area does not include suitable habitat, or is outside of the known geographic or elevation range, for many of the terrestrial species documented in the CNDDB and California Native Plant Society searches. Therefore, the analysis is limited to potential impacts on the following wildlife species, which are considered to have a moderate or high potential to occur because the project area includes suitable habitat and is within the species' known range: western bumble bee (*Bombus occidentalis*), western burrowing owl (*Athene cunicularia hypugea*), birds protected by the Migratory Bird Treaty Act, pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), hoary bat (*Lasiurus cinereus*), and Suisun marsh aster (*Symphyotrichum lentum*). The potential distribution of these species in the project area is described below.

Western Bumble Bee (*Bombus occidentalis*)

Western bumble bee is a candidate for listing as a state endangered species. Based on records from California, western bumble bee records are primarily associated with plants in the Leguminosae (=Fabaceae), Compositae (=Asteraceae), Rhamnaceae, and Rosaceae families; however, these floral associations do not necessarily represent the species' preference for these plants over other flowering plants, but rather may represent the abundance of these flowers in the landscape. The habitat for western bumble bee is described as open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.[14] Suitable habitat may be present within the project area for western bumble bee due to the presence of potential host plants from the families Asteraceae and Fabaceae, including coyote brush (*Baccharis pilularis*), Italian thistle (*Carduus pycnocephalus*), and French broom (*Genista monspessulana*), which are present adjacent to existing rip-rap in the northern portion of the project area. Although the potential habitat within the project site is limited and patchy, the presence of native chaparral plants such as coastal (=California) sage brush (*Artemisia californica*) on the hillsides adjacent to the project area could provide supplemental habitat allowing this species to survive at Point San Pablo.

Western Burrowing Owl (*Athene cunicularia hypugea*)

Western burrowing owl, a California Species of Special Concern, is a resident, as well as an overwintering migrant, in California that prefers open annual or perennial grasslands and disturbed sites with existing burrows, elevated perches, large areas of bare ground or low vegetation, and few visual obstructions. Ground squirrel colonies often provide a source of burrows and are typically located near water and areas with large numbers of prey species, primarily insects. Breeding takes place between March and August, with a peak in April and

[14] Hatfield, R., Jepsen, S., Thorp, R., Richardson, L., Colla, S. & Foltz Jordan, S. 2015. *Bombus occidentalis*. *The IUCN Red List of Threatened Species* 2015: e.T44937492A46440201. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937492A46440201.en. Downloaded on 02 October 2019.

May. There are no occurrences of burrowing owl within 3 miles of the project area; however, burrows 3 to 4 inches in diameter, which are suitable for use by burrowing owl, were opportunistically observed during Environmental Science Associates' site visit on May 24, 2018. No evidence of burrowing owl presence or burrow occupancy was observed during the visit.

Nesting Birds

No bird species listed by the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA) were deemed to have a moderate or high potential to occur in the study area (refer to Table BIO-1 in Appendix C). Non-FESA/CESA-listed breeding birds are protected under California Fish and Game Code Section 3503 and raptors are protected under Section 3503.5. In addition, Section 3513 of the Code and the Federal Migratory Bird Treaty Act (16 USC, Sec. 703 Supp. I, 1989) prohibits the killing, possession, or trading of migratory birds. Finally, Section 3800 of the Code prohibits the taking of non-game birds, defined as birds occurring naturally in California that are not game birds or fully protected species.

A pair of osprey (*Pandion haliaetus*) is known to have nested on, or adjacent to (i.e., on pilings), Point San Pablo from 2014 to 2019.[15] The pair was observed by ESA biologists during a site visit on May 24, 2018 nesting on an electrical pole approximately 130 feet from the project area. CDFW typically recommends providing a 500-foot avoidance buffer around active raptor nests.

Bird species that have a moderate or high potential to nest in the project area include double-crested cormorant (*Phalacrocorax auritu*), cliff swallow (*Petrochelidon pyrrhonota*), black phoebe (*Sayornis nigricans*), house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), California towhee (*Melozone crissalis*) and many other common native birds. Because birds could nest in or on trees, shrubs, ruderal areas, barren ground, barges, cranes, electrical poles, and buildings, many parts of the project area are considered potential nesting habitat.

Special-Status Bats

Several special-status bat species have the potential to occur in the project area: pallid bat and Townsend's big-eared bat, both California species of special concern, and hoary bat, which is designated as "medium" risk status by the Western Bat Working Group.[16,17] Suitable roosting habitat in the project area for these bats includes unoccupied buildings.

Special-Status Plants

Suitable habitat for Suisun marsh aster is present in the project area adjacent to the shoreline, including within rip-rap and in the upland habitat adjacent to rip-rap. In addition, this species was recorded in a similarly disturbed habitat at Point Molate, approximately 1.5 miles south of the project area, in the 1980s. Suisun marsh aster has a California Rare Plant Rank (CRPR) of 1B.2.

15 Brake, A.J., Citizen Scientist, Golden Gate Raptor Observatory, email communication, November 11, 2019.

16 A designation of "medium" indicates a level of concern that should warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.

17 Western Bat Working Group (WBWG), 2019. Species Matrix page. http://wbwg.org/matrices/species-matrix/. Accessed November 14, 2019.

The California Native Plant Protection Act directs the California Fish and Game Commission to designate plants as rare and endangered and generally prohibits take of endangered or rare native plants. Plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. All of the plants with a CRPR of 1B meet the criteria of CEQA.

Special-Status Fish

Several special-status fish species listed under FESA or CESA, or that have other protection under federal and state law, have the potential to occur in the waters within and immediately adjacent to the project area. These species are described below.

Winter-run Chinook salmon (*Oncorhynchus tshawytscha*)

The winter-run Chinook salmon Sacramento River Evolutionarily Significant Unit (ESU) is listed as endangered by the National Marine Fisheries Service (NMFS). Adult winter-run Chinook salmon enter San Francisco Bay from November through May or June, reaching the Red Bluff Diversion Dam on the Sacramento River between January and May. Spawning occurs in the Sacramento River upstream of the Red Bluff Diversion Dam from Redding to Tehama from mid-April through August. Fry emergence occurs from mid-June through mid-October. Juvenile (pre-smolt/smolt) emigration begins in September, and emigration through the Lower Sacramento River Delta and San Francisco Bay occurs from September through June.

Designated critical habitat for winter-run Chinook salmon includes the Sacramento River downstream from Keswick Dam, the Sacramento-San Joaquin Delta, and all waters of Suisun, San Pablo, and San Francisco Bays west to the Golden Gate Bridge. As such, the project area is within the designated critical habitat for this species. Winter-run Chinook salmon smolt may pass through and forage within the project area during emigration to the Pacific Ocean, and therefore have a moderate potential to occur within the project area and vicinity.

Central Valley spring-run Chinook salmon (*O. tshawytscha*)

The Central Valley spring-run Chinook salmon ESU is listed as threatened by NMFS. Central Valley spring-run Chinook salmon probably enter San Francisco Bay between late January and mid-February, based on their return to natal tributaries as immature adults between March and July. They hold in deep pools for up to several months before spawning. Spawning occurs between September and October and fry emergence occurs between November and February.

Central Valley spring-run Chinook salmon emigration is highly variable, with some juveniles spending up to 13 months in freshwater habitat. The pre-smolt/smolt emigration period typically extends from November to early May, with the majority of smolt emigrating through San Francisco Bay between mid-November and February. Designated critical habitat for Central Valley spring-run Chinook salmon does not include the waters of San Francisco Bay. As such, the project area does not lie within designated critical habitat for this species. However, Central Valley spring-run Chinook salmon smolt may pass through and forage within the project area during emigration to the Pacific Ocean, and therefore have a moderate potential to occur within the project area and vicinity.

Central Valley fall/late fall run Chinook salmon (*O. tshawytscha*)

The Central Valley fall/late-fall-run Chinook salmon ESU is not listed as threatened or endangered under CESA or FESA; however, it is classified as a federal species of concern by NMFS and California species of special concern. This ESU includes all naturally spawned populations of Central Valley fall/late fall-run Chinook salmon in the Sacramento and San Joaquin rivers and their tributaries east of Carquinez Strait. Central Valley fall/late-fall-run Chinook salmon enter San Francisco Bay between July and November and spawn in the Sacramento River basin between September and December. Juvenile emigration through the Sacramento-San Joaquin Delta and San Francisco Bay occurs between March and July. Central Valley fall/late-run Chinook salmon smolt may pass through and forage within the project area during emigration to the Pacific Ocean, and therefore have a moderate potential to occur within the project area and vicinity.

Central Valley steelhead (*O. mykiss*)

The Central Valley steelhead Distinct Population Segment (DPS) is listed as threatened by NMFS. This DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin rivers and their tributaries below natural and manmade impassable barriers (excluding steelhead from San Francisco and San Pablo Bays and their tributaries) as well as two artificial propagation programs: The Coleman National Fish Hatchery and the Feather River Hatchery steelhead hatchery programs. Central Valley steelhead adults migrate from the Pacific Ocean through San Francisco Bay through much of the year, with the peak migration period through San Francisco Bay occurring from September through December. Spawning occurs from November through April, and emergence of fry occurs between January and June. Juvenile steelhead spend 1 to 3 years in freshwater before emigrating as smolts. In general, juvenile emigration through the Sacramento-San Joaquin Delta and San Francisco Bay occurs from December through July.

Designated critical habitat for Central Valley steelhead includes all river reaches accessible to listed steelhead in the Sacramento and San Joaquin Rivers and their tributaries, all river reaches and riparian zones of the Sacramento-San Joaquin Delta, and all waters of Suisun, San Pablo, and San Francisco Bays west to the Golden Gate Bridge. As such, the project area is within the designated critical habitat for this species. Central Valley steelhead smolt may pass through and forage within the project area during emigration to the Pacific Ocean, and therefore have a moderate potential to occur within the project area and vicinity.

Central California Coast steelhead (*O. mykiss*)

The Central California Coast steelhead DPS is listed as threatened by NMFS. This DPS includes all naturally spawned populations of steelhead from the Russian River to Aptos Creek, and includes the populations spawning in streams and rivers tributary to San Francisco Bay (including San Pablo, and Suisun Bays) eastward to Chipps Island. In general, adult Central California Coast steelhead spawning in streams tributary to San Francisco Bay migrate from the Pacific Ocean through San Francisco Bay from November through February. Spawning occurs from December through April, and fry emergence occurs from January through May. Juvenile Central California

Coast steelhead rear in freshwater for 1 to 3 years (usually 2 years) before emigrating as smolts through San Francisco Bay to the Pacific Ocean, generally from January through June.

Designated critical habitat for Central California Coast steelhead includes all river and stream reaches accessible to listed steelhead tributary to the Pacific Ocean from the Russian River to Aptos Creek, and all river and stream reaches accessible to listed steelhead tributary to Suisun, San Pablo, and San Francisco Bays, and all waters of Suisun, San Pablo, and San Francisco Bays west to the Golden Gate Bridge. As such, the project area is within the designated critical habitat mapped for this species. Although Central California Coast steelhead smolt and adults may pass through and possibly forage within the project area during emigration to the Pacific Ocean, the project area lacks the primary constituents of estuarine habitat such as side channels, large woody debris, natural cover, and other features that would make it productive rearing habitat for steelhead. Therefore, the site does not support any of the primary constituent elements to be considered critical habitat.

Green Sturgeon (*Acipenser medirostris*)

The southern DPS of North American green sturgeon is listed as threatened by NMFS. The southern DPS includes all green sturgeon south of the Eel River (Humboldt County) including those inhabiting all waters of Suisun, San Pablo and San Francisco Bays, the Sacramento-San Joaquin Delta, and the Sacramento, Feather and Yuba Rivers. Adult green sturgeon begin their spawning migrations into San Francisco Bay in March, and spawn in the Sacramento River from the Hamilton City area and upstream to possibly Keswick Dam.[18] Spawning occurs from April through June. Juvenile green sturgeon rear in freshwater and estuarine habitat of the Sacramento River and the Sacramento-San Joaquin Delta for 1 to 4 years before emigrating through San Francisco Bay and eventually into the Pacific Ocean. However, some adult and juvenile green sturgeon may be present in San Francisco Bay throughout the year.

Designated critical habitat for the green sturgeon within California includes the Sacramento River downstream from Keswick Dam, the Sacramento-San Joaquin Delta, Suisun, San Pablo, and San Francisco Bays, and all waters of Suisun, San Pablo, and San Francisco Bays west to the Golden Gate Bridge. As such, the project area is within the designated critical habitat for this species.

Green sturgeon may spend considerable time foraging within San Francisco Bay during immigration and emigration to the Pacific Ocean. Suitable foraging habitat exists within the project area (e.g., soft bottom substrates with benthic fish and invertebrate species). Therefore, green sturgeon has a moderate potential to occur within the project area and vicinity.

Longfin smelt (*Spirinchus thaleichthys*)

The longfin smelt is a small, slender-bodied pelagic fish listed as threatened under the California Endangered Species Act and is a candidate for listing under the Federal Endangered Species Act.

[18] Brown, K. 2007. Evidence of spawning by green sturgeon, *Acipenser medirostris*, in the upper Sacramento River, California. Environmental Biology of Fishes. August 2007, Volume 79, Issue 3-4, pp 297-303.

They typically measure approximately 3 inches in length as adults and generally live for two years, although some three-year smelt have been observed.

Pre-spawning longfin smelt migrate upstream into the lower reaches of rivers during the late fall and winter. Smelt have adhesive eggs which are deposited on sand, gravel, rocks, submerged aquatic vegetation, and other hard substrates during spawning. Spawning typically occurs during the late winter and early spring (mid- to late February) but varies among years in response to factors such as seasonal water temperatures. During spawning, each female produces approximately 5,000 to 24,000 eggs. It is estimated that total reproduction within a year is in the hundreds of millions of eggs or more. As with most fish, mortality rates for eggs and larvae in longfin smelt are high. Those that survive to the planktonic larval stage are transported into the western Delta and Suisun Bay during the late winter and spring where juveniles rear.

Longfin smelt have a two-year lifecycle and reside as juveniles and pre-spawning adults in the more saline habitats within San Pablo Bay and Central Bay during a majority of their life. Movement patterns based on catches in CDFW fishery sampling suggest that longfin smelt actively avoid water temperatures greater than 22° C (72° F). These conditions occur within the Delta during the summer and early fall, when longfin smelt inhabit more marine waters further downstream in the bays and are not present within the Delta.

Longfin smelt are most likely to occur within Central San Francisco Bay during the late summer months before migrating upstream in fall and winter. However, during winter months, when fish are moving upstream to spawn, high outflows may push many back into San Francisco Bay.

Pacific Herring (*Clupea pallasii*)

Pacific herring are a CDFW managed species and are protected within San Francisco Bay under the Marine Life Management Act (MLMA) which provides guidance, in the form of Fisheries Management Plans (FMP), for the sustainable management of California's historic fisheries. CDFW, in partnership with the fishing industry and conservation groups, is currently updating the Pacific herring FMP, which will formalize a strategy for the future management of the fishery.

The Pacific herring is a small schooling marine fish that enters estuaries and bays to spawn. This species is known to spawn along the Oakland and San Francisco waterfronts and attach its egg masses to eelgrass, seaweed, and hard substrates such as pilings, breakwater rubble, and other "hard surfaces". An individual can spawn only once during the season, and the spent female returns to the ocean immediately after spawning. Spawning usually takes place between October and March with a peak between December and February. After hatching, juvenile herring typically congregate in San Francisco Bay during the summer and move into deeper waters in the fall.

No herring spawning has been documented within the study area during the 2015-16, 2016-17, and 2017-2018 CDFW monitoring seasons. However, south of the study area along the Point Richmond shoreline spawning is consistently documented within existing eelgrass habitat.

Marine Mammals

California Sea Lion (*Zalophus californianus*)

The California sea lion is protected under the Marine Mammal Protection Act (MMPA). California sea lions breed in Southern California and along the Channel Islands. After the breeding season, males migrate up the Pacific Coast and enter San Francisco Bay. In San Francisco Bay, sea lions are known to haul out at Pier 39 in the Fisherman's Wharf area of the San Francisco Marina. No other repeatedly used haul-out site for California sea lions, other than Pier 39, has been observed in San Francisco Bay. California sea lions forage on a wide range of fish species; particularly schooling species such as Pacific herring (*Clupea pallasii*) and northern anchovy.

Pacific Harbor Seal (*Phoca vitulina*)

The harbor seal is protected by the MMPA. Harbor seals are non-migratory and can be found along shorelines and in estuaries throughout North America. Pacific harbor seals use San Francisco Bay year-round where they engage in limited seasonal movements associated with foraging and breeding activities. Harbor seals haul out in groups ranging in size from a few individuals to several hundred seals. Habitats used as haul-out sites include tidal rocks, bay flats, sandbars, and sandy beaches. Haul-out sites are relatively consistent from year to year and are important habitats for harbor seals in San Francisco Bay; pupping occurs from March to May, and molting in June and July. These activities correspond to the greatest number of harbor seals counted at major haul-out sites in San Francisco Bay. Haul-out sites that support some of the largest concentrations of seals include Corte Madera Marsh and Castro Rocks in the Central Bay, Mowry Slough south of Dumbarton Bridge, and Yerba Buena Island.

Sensitive Natural Communities

Eelgrass (*Zostera marina*)

Eelgrass is a native marine vascular plant indigenous to the soft-bottom shallow bays and estuaries of the Northern Hemisphere. The species' range extends from Baja California to northern Alaska along the West Coast of North America, as well as from North Carolina to Newfoundland on the East Coast, and along the coasts of Europe and East Asia. In San Francisco and San Pablo Bays, eelgrass beds occur on soft bottom substrate in shallow areas (typically less than -1.5 meter depth at mean low tide level). Eelgrass beds are extremely dynamic, expanding and contracting seasonally and annually depending on the quality of the site. Consequently, they serve as an indicator community for the overall health of an estuary. Eelgrass plays many roles within the estuary system. It clarifies water through sediment trapping and habitat stabilization. It also provides benefits of nutrient transformation and water oxygenation. Eelgrass serves as a primary producer in a detrital based food-web and is further directly grazed upon by invertebrates, fish, and birds. It supports epiphytic plants and animals that, in turn, are grazed upon by other invertebrates, larval and juvenile fish, and birds. Eelgrass is a nursery area for many commercially and recreationally important finfish and shellfish species including those that are resident within bays and estuaries, nearly all of the anadromous fish species found along the Pacific coast, and oceanic species, which enter the estuaries to breed or spawn. Besides providing

important habitat for fish, eelgrass habitat also is considered to be an important resource supporting migratory birds during critical life stages, including migratory periods.

Vegetated shallows that support eelgrass are considered "special aquatic sites" under the 404(b)(1) guidelines of the Clean Water Act (40 C.F.R. Section 230.43). Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), eelgrass is designated as Essential Fish Habitat (EFH) for various federally managed fish species within the Pacific Coast Groundfish and Pacific Coast Salmon Fisheries Management Plans (FMP) (PFMC 2008). Eelgrass is also designated as a Habitat Area of Particular Concern (HAPC) by NMFS. Eelgrass occurs beneath the Terminal Four wharf; a large expanse of eelgrass exists towards the southern end of the study area. Potential impacts to eelgrass from project construction and, indirectly, as a result of the structure removal are discussed below.

Discussion

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

Western Bumble Bee

Although western bumble bee could be present in the project area based its association with the Asteraceae and Fabaceae plant families, vegetation removal is not planned in the areas where coyote brush, Italian thistle, and French broom were observed. Furthermore, although coyote brush is a native plant, Italian thistle and French broom are non-native species. French broom is rated as highly invasive, and Italian thistle as moderately invasive, by the California Invasive Plant Council;[19] therefore, while these plants may or may not provide resources to western bumble bee, the presence of these species is a detriment to the local vegetative community in general. In addition, the installation of the enhanced rock slope protection (ERSP) includes planting native plants of the Point San Pablo ecotone along the crown of the 350-foot long ERSP. Vegetation that is proposed for the living crown includes potential host plants for western bumble bee, including coastal (=California) sage brush, marsh gumplant (*Grindelia stricta* var. *angustifolia*), and marsh jaumea from the Asteraceae family, and silver bush lupine, from the Fabaceae family. Because potential host plants for western bumble bee are not planned for removal, but are planned for planting on the living crown of the ESRP, there would be no impact to western bumble bee.

Western Burrowing Owl

Construction-related impacts to western burrowing owls would primarily include crushing burrows in use by owls for either breeding or wintering. In addition, noise, vibration, increased vehicular traffic and human presence during demolition activities, project staging and access could result in nest failure (disturbance, avoidance, or abandonment that leads to unsuccessful reproduction), or cause flight behavior that exposes an adult or its young to predators during the breeding season. These activities could also cause wintering birds to flush, expending energy or interrupting foraging and

[19] California Invasive Plant Council (Cal-IPC), 2019. Cal-IPC Inventory of invasive plants. https://www.cal-ipc.org/plants/profiles/. Accessed November 13, 2019.

roosting, and potentially exposing an owl to predators. These would be significant impacts. Implementation of **Mitigation Measure BIO-1**, Avoidance and Minimization of Impacts to Western Burrowing Owl, would mitigate potential impacts to burrowing owls to a less-than-significant level.

> **Mitigation Measure BIO-1: Avoidance and Minimization of Impacts to Western Burrowing Owl.** Prior to commencement of on-shore construction activities for the project, including materials staging and/or increased vehicular traffic, SCC will implement the following measures:
>
> - ***Preconstruction Surveys***. Preconstruction surveys for suitable burrowing owl habitat and/or burrowing owls will be conducted no fewer than 14 days prior to the initiation of project activities (including equipment and materials staging) within the project area. Surveys will be conducted by a qualified biologist in conformance with the most recent requirements and guidelines of the California Department of Fish and Wildlife (CDFW). The biologist will determine the number and time frame (prior to construction) of surveys to be conducted. If no burrowing owls are detected, no additional action is necessary.
>
> - ***Monitoring***. In areas positive for burrowing owl presence, the Lead Biologist or qualified biological monitor will be onsite during all construction activities in areas where burrowing owls are determined to be present.
>
> - ***Passive Relocation***. If burrowing owls cannot be avoided by the project, then additional measures, such as passive relocation during the nonbreeding season, would be implemented to reduce any potential impacts. Measures for successful relocation will be recommended by a qualified biologist and will be in conformance with CDFW requirements and guidelines.
>
> - ***Resumption of Construction Activities***. When a qualified biologist is able to determine that burrowing owls are no longer occupying the site and passive relocation is deemed successful, construction activities may continue.

Nesting Birds

Construction-related direct impacts during the bird nesting season (February through August) could occur if vegetation were removed, or buildings, wharf and piers were demolished while an active bird nest were present. In addition, operation of barges, heavy equipment, project staging and access, and increased human presence could result in noise, vibration, and visual disturbance. These activities could indirectly result in nest failure (disturbance, avoidance, or abandonment that leads to unsuccessful reproduction), or cause flight behavior that exposes an adult or its young to predators. These activities could cause birds that have established a nest before the start of construction to change their behavior or even abandon an active nest, putting eggs and nestlings at risk for mortality.

Impacts during the non-breeding season are not considered significant, primarily due to birds' mobility, allowing them to access other high-quality foraging and resting habitat in the region. Comparable to higher quality breeding, foraging, resting habitat for special-

status birds exists nearby; therefore, temporary disturbance to the project area during construction is considered minor. Furthermore, direct and indirect impacts would be limited to the duration of project construction, which is expected to last six months, since no long-term alterations to terrestrial habitat are anticipated. Implementation of the best management practices for nesting birds described in Section 2.5.1 in the Project Description would prevent significant impacts to nesting birds.

Special-Status Bats

Impacts to special-status bats could occur if building demolition were to occur during periods of winter torpor; any bats present would likely not survive the disturbance.[20] Disturbance to maternity roosts could impact survival of young. These disturbances would be a significant impact. Implementation of **Mitigation Measure BIO-2**, Avoidance and Minimization of Impacts to Roosting Bats, would reduce this impact to a less-than-significant level.

> **Mitigation Measure BIO-2: Avoidance and Minimization of Impacts to Roosting Bats.** In advance of building removal, a pre-construction survey for special-status bats will be conducted by a qualified biologist to characterize potential bat habitat and identify active roost sites within buildings to be removed. Should potential roosting habitat or active bat roosts be found in buildings to be removed under the project, the following measures will be implemented:
>
> - Removal of buildings with active roosts will occur when bats are active, approximately between the periods of March 1–April 15 and August 15–October 15; outside of bat maternity roosting season (approximately April 15–August 15) and outside of months of winter torpor (approximately October 15–February 28), to the extent feasible.
>
> - If removal of buildings 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 area where building removal is planned, a no-disturbance buffer of 100 feet will be established around these roost sites until they are determined to be no longer active by the qualified biologist.
>
> - The qualified biologist will be present during building removal if active bat roosts, which are not being used for maternity or hibernation purposes, are present. Buildings with active roosts will be removed only when no rain is occurring or is forecast to occur for 3 days and when daytime temperatures are at least 50°F.
>
> - Removal of buildings containing or suspected to contain active bat roosts, which are not being used for maternity or hibernation purposes, will be dismantled under the supervision of the qualified biologist. Buildings will be

[20] Tuttle, M., 1991. *How North America Bats are at Their Most Vulnerable During Hibernation and Migration*, *BATS Magazine*, Volume 9, No. 3. Fall 1991, http://www.batcon.org/resources/media-education/bats-magazine/bat_article/492, accessed January 5, 2018.

partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost.

Special-Status Plants

Suisun marsh aster has not been confirmed in the project area, though potential habitat that could support this species occurs on-site. Construction-related impacts to Suisun marsh aster could occur due to: vegetation removal activities within and adjacent to rip-rap; damage during removal of railroad remnants, steel holding tank, concrete box or utilities and pipes, which are located in or on rip-rap; or direct crushing by materials or vehicles using the potential staging areas and roads adjacent to rip-rap. Implementation of **Mitigation Measure BIO-3**, Avoidance and Minimization of Impacts to Special-Status Plants, would reduce this impact to a less-than-significant level.

Mitigation Measure BIO-3: Avoidance and Minimization of Impacts to Suisun Marsh Aster. Prior to conducting demolition, the SCC will implement the following measures:

- Prior to the start of construction, a qualified biologist will conduct a special-status plant survey for Suisun marsh aster within the species' suitable habitat within the project work limits and during a time when the plant can be identified to species. The survey will follow the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*.[21] If special-status plant species occur within the project work limits, then the biologist will establish an adequate buffer area for each plant population to exclude activities that directly remove or alter the habitat of, or result in indirect adverse impacts on, the special-status plant species. A qualified biologist will oversee installation of a temporary, plastic mesh-type construction fence (Tensor Polygrid or equivalent) at least 4 feet (1.2 meters) tall around any established buffer areas to prevent encroachment by construction vehicles and personnel. The qualified biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 10 feet (3 meters) and will be checked and maintained weekly until all construction is complete. The buffer zone established by the fencing will be marked by a sign stating, "This is habitat of Suisun marsh aster, and must not be disturbed. No construction activity, including grading, will be allowed."

- If impacts to Suisun marsh aster cannot be avoided, plants within the construction impact area will be relocated to suitable habitat at similar tidal elevation as the source site, and outside of the construction impact area. Suisun marsh aster rhizomes will be transplanted immediately within the relocation site(s). Relocation site(s) will be identified by a botanist and transplant material will be replanted immediately after being removed.

- Location of transplanted material will be recorded using a submeter accuracy GPS unit (e.g., Trimble GPS) to enable finding the relocation plantings for monitoring. Annual mitigation monitoring of relocated plants will be

[21] California Department of Fish and Wildlife (CDFW). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Revised March 20, 2018.

conducted during the flowering period for the Suisun marsh aster and will include information on the number of surviving plants and/or patch size, vigor of plantings, plant associates, any observed population threats, and photographs of transplanted material. A monitoring period of at least three years or until the success criteria of 1:1 mitigation has been achieved will be required, up to a maximum of five years.

- If Suisun marsh aster cannot be relocated, individual plants will be replaced at a 3:1 ratio within the project site, or as close to the project site as possible, in suitable habitat at similar elevation as the source site(s). The planting site(s) will be identified by a botanist. Location of transplanted material will be recorded using a submeter accuracy GPS unit (e.g., Trimble GPS) to enable finding the mitigation plantings for monitoring. Annual mitigation monitoring of relocated plants will be conducted during the flowering period for the Suisun marsh aster and will include information on the number of surviving plants and/or patch size, vigor of plantings, plant associates, any observed population threats, and photographs of transplanted material. A monitoring period of at least three years or until the success criteria of 3:1 mitigation has been achieved will be required, up to a maximum of five years.

- If monitoring indicates the performance criteria are met or exceeded prior to the end of the five year monitoring period, then the SCC will have fulfilled its mitigation obligation for Suisun marsh aster, and will notify CDFW. If monitoring indicates the performance criteria is not being met (or is unlikely to be met), then the SCC will initiate consultation with CDFW to determine an alternative course of action, including possible additional transplants or seed collection for off-site propagation and outplanting, or donation to a seed conservation bank to preserve the population genes.

Special-Status Fish and Marine Mammals

The project is designed to remove large amounts of debris and sources of contamination from the Bay, which consists of the remains of a wharf, warehouse, and associated pilings and structures. Upon removal of the debris, the project would also enhance a degraded area of shoreline and the associated intertidal and subtidal habitat, and enable the expansion of existing eelgrass beds and rocky intertidal habitats.

One contaminant of particular note is creosote, an oily product distilled from crude coal tar that contains hundreds of chemical compounds. The primary constituents of creosote are polycyclic aromatic hydrocarbons (PAHs) and alkylated PAHs, which account for up to 90 percent of creosote mixtures.[22] PAHs that leach out of creosote-treated piles persist in the environment and are toxic to some organisms. Harmful levels of contact may occur if organisms feed on prey species inhabiting the surface of the piles or if organisms lay eggs directly on piles, as is the case with Pacific herring (*Clupea pallasi*). Adverse effects on Pacific herring from exposure to PAHs include developmental delays, degeneration, edema, changes in movement, and alterations to cardiac function in embryos; lower rate

[22] World Health Organization, Concise International Chemical Assessment Document 62, *Coal Tar Creosote*, 2004.

of hatching success; and skeletal defects in larvae.[23] Because the majority of the piles at Terminal Four contain creosote-treated wood, their removal would bring immediate benefits to water quality and the natural habitats and Bay ecosystems. Their removal would also enable the active, natural spread of existing eelgrass (*Zostera marina*) beds, Pacific rockweed (*Fucus distuchis*), and other vegetation and seaweed species near Terminal Four and attendant benefits to Pacific herring and other organisms.

While implementation of the project would result in a net benefit in habitat conditions for aquatic organisms, the required in-water demolition and construction work to achieve those benefits may result in temporary impacts to aquatic species habitat. Temporary impacts from in-water work fall within two main categories: (1) elevated underwater noise or vibration levels during pile removal, and (2) water quality impairment during demolition and construction activities.

Hydroacoustic Impacts

Vibratory hammers may be required to remove creosote-contaminated piles. Use of a vibratory hammer has the potential to generate increased underwater sound levels that are dangerous to aquatic species, marine mammals in particular.

Vibratory pile drivers work on a different principal than impact pile-driving hammers and therein produce a different sound profile. A vibratory driver works by inducting particle motion to the substrate immediately below and around the pile, causing liquefaction of the immediately adjacent sediment, allowing the pile to be removed. While vibratory pile driving typically generates sound profiles 10-20 decibels (dB)[24] lower in intensity, relative to impact hammers, noise generated from these activities can have deleterious effects on marine mammals. As such, the National Oceanic and Atmospheric Association enforces underwater noise thresholds to prevent such an impact.[25]

If vibratory hammers are used to remove piles, implementation of **Mitigation Measure BIO-4** would ensure hydroacoustic impacts on marine mammals occur at less-than-significant levels.

Impacts to Water Quality

Activities that may temporarily degrade water quality within the study area would be limited to construction activities aimed at removing piles, debris, and other degraded infrastructure within the construction footprint. Activities that cause contact with the sea floor, including pile removal, may generate temporary increases in turbidity. Refer to

[23] Griffin, F.J., Pillai, M.C., Vines, C.A., Kaaria, J., Hibbard-Robbins, T., Yanagimachi, R., and Cherr, G.N. 1998. Effects of salinity on sperm motility, fertilization, and development in the Pacific herring, Clupea pallasi. Biological Bulletin. Vol. 194: pp. 25-35; and Duncan, D. 2014. The toxicity of creosote treated wood to Pacific herring (Clupea pallasi) embryos and characterization of polycylic aromatic hydrocarbons near creosoted pilings in Juneau, Alaska. Masters Thesis, University of Alaska Fairbanks.

[24] Noise is unwanted sound. Sound, traveling in the form of waves from a source, exerts a pressure level (referred to as sound level) that is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

[25] Vibratory hammer effects appear to be less impactful to fish, therefore thresholds have not been developed for fish at this time.

Section 2.4.3 for more information regarding pile and bay floor debris. Increased turbidity levels associated with in-water construction would be minor, relatively short-lived, and generally localized to the immediate area of construction. Following construction work, sediments would disperse and background levels would be restored within hours of disturbance. In addition, normal circulation and strong currents along the Terminal Four waterfront rapidly would circulate and disperse water temporarily affected by maintenance activities.

Although removal of creosote pilings may release some organic substances, removal of degraded or old pilings would ultimately improve localized water and sediment quality over the long term.

Typically, removal of piles causes only temporary resuspension of sediments. Increased suspended solids can also impact aquatic organisms by reducing dissolved oxygen levels and light transmission and when sediment resettles which could have the potential to smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids and several species of birds).[26] Substantially depressed oxygen levels (i.e., below 5.0 mg/l) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause mortality. However, due to the project area's proximity to the deep waters of central San Francisco Bay, currents are expected to be strong and function to dissipate turbidity plumes within hours, if not faster. Similarly, oxygen level depression resulting from construction activities are not expected to persist due to rapid tidal flushing and the short duration of releases of anoxic (oxygen-poor) sediment.

Multiple BMPs built into the project are proposed for implementation during construction to confine water quality impacts to less-than-significant levels. As described in Section 2.5.3, silt curtains would be installed around all active construction areas, and extensive water quality monitoring would be conducted during all construction activities. Construction-related BMPs for debris management, hazardous material disposal, containment, and turbidity are described under Section 2.5.1. A worker environmental awareness training would be given to all construction staff, as described under 2.5.4. Additionally, a hazardous materials management plan (HMMP) would be developed and implemented, consistent with the measures described under Section 2.5.6. Lastly, the project schedule (described in Section 2.4.6) dictates that in-water work would occur outside salmonid migration period, from August 1 to November 30, to minimize the potential for impacts on special-status fish species. Elevated levels of turbidity fed by sediment resuspension would be short-term and localized. Through implementation of the above-referenced construction best management practices and mitigation measures and a construction schedule that minimizes the potential for impacts on special-status fish

[26] Anchor Environmental, 2003. Literature Review of Effects of Resuspended Sediments Due to Dredging Operations. Prepared for Los Angeles Contaminated Sediments Task Force, Los Angeles, California. June 2003.

species, significant impacts related to special-status aquatic species within the study area would be avoided or mitigated to a less-than-significant level.

Mitigation Measure BIO-4: Use of Vibratory Pile Hammers. If use of a vibratory hammer is required for pile removal the following marine mammal protection criteria will be implemented:

- The contractor will monitor marine mammal presence when vibratory hammers are used. Marine mammal monitoring will include, at a minimum, the following conditions:
  - A 50-meter marine mammal monitoring zone will be established around each pile removal location.
  - A qualified biological monitor(s) would be located at the best vantage point(s) in order to properly see as much of the monitoring zone as possible.
  - During all observation periods, the monitor(s) will use binoculars and the naked eye to search continuously for marine mammals.
  - If the monitoring zone is obscured by fog or poor lighting conditions, pile removal at that location will not be initiated until that zone is visible. Should such conditions arise while installation is underway, the activity would be paused.
  - The monitoring zone around the pile will be monitored for the presence of marine mammals 30 minutes before, during, and 15 minutes after any pile driving activity.
  - Work activities would be halted when a marine mammal enters the monitoring zone and resume only after the animal has been gone from the area for a minimum of 15 minutes.
  - Airborne sound levels below 90 dB when harbor seals are present, 100 dB for other pinnipeds, will be maintained.

b) **Less than Significant with Mitigation.** This section addresses impacts on riparian habitat and sensitive natural communities, including essential fish habitat (EFH) and designated critical habitat. The study area does not include riparian habitat or special-status terrestrial natural communities. Additionally, no USFWS-designated critical habitat for terrestrial species existing within the study area. The subsequent discussion pertains only to aquatic species and habitat.

Critical Habitat

The aquatic portions of the study area are designed as critical habitat for the winter-run Chinook salmon, Central Valley steelhead, Central California Coast steelhead, and green sturgeon. Temporary impacts to critical habitat are expected to occur in the form of impairments to water quality and elevated levels of underwater noise during vibratory pile removal. These impacts are described above and may result in the temporary exclusion of these species from designated critical habitat during construction activities.

However, implementation of Mitigation Measure BIO-4 and the best management practices described in Sections 2.5.1, 2.5.3, and 2.5.6 would avoid significant impacts and reduce the level of impact on critical habitat to less-than-significant levels. Over the long term, project implementation would improve water quality conditions through the removal of harmful contaminants and degraded structures. Overall, the project would have a beneficial effect on critical habitat for these species.

Essential Fish Habitat

The study area falls within Essential Fish Habitat (EFH), as defined in the MSA, for multiple species of commercially-important fish and sharks managed under three federal fisheries management plans (FMPs):

- **Pacific Groundfish FMP:** The Pacific Groundfish FMP is designed to protect habitat for more than 90 species of fish, including rockfish, flatfish, roundfish, some sharks and skates, and other species that associate with the underwater substrate. Species common in Central San Francisco Bay waters and include English sole, Pacific sanddab, starry flounder, lingcod, brown rockfish, kelp greenling, leopard shark, and big skate.[27]
- **Coastal Pelagic FMP:** The Coastal Pelagic FMP is designed to protect habitat for a variety of fish species that are associated with open coastal waters. Fish managed under this plan include planktivores and their predators. Those common in Central San Francisco Bay include Pacific herring and jacksmelt.[28]
- **Pacific Salmon FMP:** The Pacific Salmon FMP is designed to protect habitat for commercially-important salmonid species. Sacramento Chinook salmon is the only one of these species that may be seasonally present in the Action Area, although historically Coho salmon were common in San Francisco Bay.[29]

Impacts to EFH would be similar to those described above under *Critical Habitat*. These impacts include the temporary impairment of water quality and increases in underwater noise during vibratory pile removal. As with effects to critical habitat, with the implementation of the BMPs and mitigation measures described above, overall effects of project implementation on EFH are expected to be less than significant.

Eelgrass

Direct Effects

Direct effects to eelgrass could result from temporary water quality impairment as a result of in-water work. In-water construction activities that cause contact with the seafloor may increase turbidity within the study area and, potentially, release harmful chemicals sequestered in the substrate. Increased turbidity may impair the photosynthetic

[27] Interagency Ecological Program (IEP) for the San Francisco Estuary, San Francisco Bay Study. 2015. 2010 – 2014 Unpublished Midwater and Bottom Trawl Data.

[28] Interagency Ecological Program (IEP) for the San Francisco Estuary, San Francisco Bay Study. 2015. 2010 – 2014 Unpublished Midwater and Bottom Trawl Data.

[29] Interagency Ecological Program (IEP) for the San Francisco Estuary, San Francisco Bay Study. 2015. 2010 – 2014 Unpublished Midwater and Bottom Trawl Data.

efficiency of eelgrass, stunting physical growth. Turbidity increases may also depress dissolved oxygen levels, elevate temperatures, and lower pH, all of which would be problematic to eelgrass health. The settling of particulates in turbid water may smoother eelgrass rhizomes and inhibit growth of smaller, vegetative bodies. Additionally, large amounts of sedimentation may raise the existing mudflat elevation, increasing the exposure of eelgrass to open air and sunlight during low tides, resulting in desiccation.

As there is the potential for significant impacts to eelgrass as a result of project implementation, extensive eelgrass protection BMPs are built into the project and are described below.

As indicated in Section 2.5.2, the project design plans and specifications[30] include the detailed requirements regarding turbidity and light levels to limit adverse effects on subtidal resources including eelgrass**.**

To further reduce the potential for impact on eelgrass, additional eelgrass surveys, monitoring, and turbidity management are included in project design plans and specifications, described in Section 2.5.5 of the Project Description. Implementation of these additional actions, along with the water quality protection best management practices described above would ensure significant impacts to eelgrass are avoided.

Indirect Effects

While the primary risk to eelgrass would occur during project construction, the effect of the removal of the degraded structures on eelgrass habitat suitability within the study area was evaluated. To assist in evaluating the potential environmental risks of terminal removal, Environmental Science Associates characterized the existing coastal processes influencing the area around Terminal Four. As part of this characterization, Environmental Science Associates conducted modeling to evaluate how these processes may be expected to change following the removal of the Terminal Four overwater structures and supporting pile field.[31] The hydrodynamic modeling suggested that the removal of the Terminal Four wharf and pile field would likely result in relatively minor changes in local circulation patterns and velocities as a result of tidal currents. However, part of these minor changes included an alteration in the hydrodynamic parameters that influence habitat suitability for eelgrass.

To evaluate potential effects on eelgrass, Merkel and Associates, Inc. conducted modeling[32] to evaluate how these processes may be expected to change following the removal of the Terminal Four overwater structures and supporting pile field. The hydrodynamics evaluations suggested that physical conditions were not likely to change

30 Refer to Technical Specifications Section 02220 – Demolition, Subsection 1.03, Submittals, and Section 01140 – Environmental Requirements, Subsection 3.01, Turbidity and Light Level Monitoring.

31 ESA, 2018. Terminal Four Wharf, Warehouse, and Pile Removal Project – Summary of Findings on Physical Coastal Processes and Coastal Processes Companion Presentation. ESA Ref. Memorandum to Marilyn Latta, State Coastal Conservancy. September 7, 2018.

32 Merkel & Associates, 2018. Modeling of Potential Changes in Eelgrass Habitat Suitability following Terminal Four Removal. Richmond Terminal Four Demolition Project.

substantially at the Terminal Four site and the dependent eelgrass suitability modeling similarly concluded that while changes in suitability would likely occur, they are of a negligible difference and fall below the capacity to make any useful predictions of change. As a result, it is not possible to determine with certainty that the changes in environmental suitability for eelgrass would occur in either a positive or negative direction. For this reason, modeling of eelgrass habitat suitability would not support any change in direction from that being pursued and evaluated through the coastal processes evaluations. In the event that indirect effects of the project result in a net reduction in eelgrass habitat, the eelgrass survey and protection best management practices described in Section 2.5.5 commit the SCC to work with the requisite regulatory agencies to mitigate for that impact. However, as the baseline condition is likely to be maintained as a result of project implementation, indirect effects of the project on eelgrass are determined to be less than significant.

c) **Less than Significant with Mitigation.** "Waters of the United States," are defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) as rivers, streams, mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters. These waters fall under the jurisdiction of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act (CWA). Additionally, the Corp regulates navigable waters under Section 10 of the Rivers and Harbors Act (R&HA). Navigable waters are defined as those waters that are subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates CWA Section 404 waters and R&HA Section 10 waters under Section 401 of the CWA. The RWQCB also regulates waters of the state under the Porter-Cologne Water Quality Control Act. Waters of the state are broadly defined as "any surface water or groundwater, including saline waters, within the boundaries of the state."

A wetland delineation was conducted by Environmental Science Associates on August 14, 2019. The delineation used the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual*.[33] The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*.[34] For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Wetlands and waters were classified using commonly accepted habitat types. All areas identified in the Preliminary Delineation of Waters of the U.S.[35] are preliminary and subject to

[33] Environmental Laboratory, Department of the Army, 1987. Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1). U.S. Army Corps of Engineers. Waterways Experimental Station. Vicksburg, Mississippi.

[34] U.S. Army Corps of Engineers, 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

[35] Environmental Science Associates (ESA), 2017. San José-Santa Clara Regional Wastewater Facility Pond A18 South Structure Preliminary Delineation of Waters of the U.S. July, 2017.

revision, pending review and final verification by the Corps. **Table 3-2** summarizes wetlands and waters within the project area; refer also to Figure BIO-3 in Appendix C.

TABLE 3-2
POTENTIALLY JURISDICTIONAL WETLANDS AND WATERS OF THE U.S. AND THE STATE IN THE WETLAND DELINEATION STUDY AREA

Feature Type	Cowardin Classification	Extent	
		Linear feet	Area (acres)
Section 404 Waters			
Wetlands			
Freshwater seep	Palustrine emergent wetlands		0.02
Seasonal wetland swale	Palustrine emergent wetlands	195	0.01
	Total Wetlands	**195**	**0.03**
Other Waters[a]			
Tidal Waters (San Francisco Bay)	Estuarine subtidal (mixosaline)		10.80
	Total Other Waters		**10.80**
	Total Section 404 Wetland and Other Waters Features	**195**	**10.83**
Section 10 Waters[b]			
Tidal Waters (San Francisco Bay)			10.60
	Total Section 10 Navigable Waters		**10.60**

NOTES:
[a] Area of Section 404 jurisdiction of San Francisco Bay, which is approximately 10.83 acres, includes Section 10 jurisdiction of San Francisco Bay, which is approximately 10.60 acres.
[b] Entire area of Section 10 jurisdiction overlaps with Section 404 jurisdiction.

Potentially jurisdictional features within the project study area that could be affected by the project include a freshwater seep and tidal waters.[36] The freshwater seep, (identified as FWS-1 on Figure BIO-3 in Appendix C), which is located at the eastern edge of a potential staging area in the northern portion of the site, could be adversely affected by vehicles or placement of equipment or materials; however, implementation of **Mitigation Measure BIO-5**, Avoid Impacts to Terrestrial Wetlands, would reduce this impact to a less-than-significant level. Tidal waters include all open tidal waters in the project area up to the high tide line (approximately 7.59 ft NAVD88) on the shoreline. The project would remove approximately 4,150 cubic yards of pilings, approximately 5,400 cubic yards of debris from the bay floor,[37] and the ERSP would remove approximately 1,950 cubic yards of material (i.e., concrete headwall and soil) along 350 feet of shoreline, for a total of approximately 11,500 cubic yards of fill removed from tidal waters in the bay. The ERSP would include installation of approximately 2,400 cubic yards of reused rock fill, backing rock fill, quarter-ton to one-ton rock boulders, and oyster reef balls. Overall, the project would result in a net removal of approximately 9,100 cubic yards of fill from tidal

[36] The seasonal wetland swale that was identified within the wetland delineation study area, shown in Table 3-2 and identified as SWS-1 in Figure BIO-3 in Appendix C, is outside of the project area and would not be adversely affected by the project.

[37] An estimated 2,700 tons of debris would be removed from the bay floor. This is equivalent to approximately 5,400 yd^3 of debris.

waters (**Table 3-3**). Therefore, there would be no loss of jurisdictional waters and no negative impacts to tidal waters.

TABLE 3-3
REMOVAL AND ADDITION OF FILL TO TIDAL WATERS (WITHIN 7.59 FT NAVD88) IN THE PROJECT AREA

Project Element	Removal of Fill (yd^3)	Addition of Fill (yd^3)	Net Fill (yd^3)
Removal of Pilings[a]	4,150	0	(4,150)
Removal of Concrete Headwall and Soil (Cut)	1,950	0	(1,950)
Removal of Bottom Debris[b]	5,400	0	(5,400)
Reused rock fill for RSP	0	440	440
Backing rock No. 2	0	800	800
Quarter-ton rock	0	1,160	1,160
Oyster reef balls for living toe[c]	0	8	8
Total[d]	**11,500**	**2,400**	**(9,100)**

NOTES: Totals have been rounded.

[a] Removal of pilling volume was estimated based on the diameter of the piles and an average pile height of 8 ft. Actual volume of piles is likely smaller.
[b] An estimated 2,700 tons of debris will be removed from the bay floor. This is approximately equivalent to 5,400 yd^3 of debris.
[c] Oyster reef ball volume was estimated based on 9 reef balls and according to the dimensions shown on the plans.
[d] Volume totals were rounded to the nearest 100 yd^3.

SOURCE: Environmental Science Associates, Terminal Four Wharf, Warehouse, and Piling Removal Project, Draft 60% Design, Contra Costa, California, June 2019.

Mitigation Measure BIO-5: Avoid Impacts to Terrestrial Wetlands. The freshwater seep identified as FWS-1 will be clearly delineated and separated from the project limits (i.e., staging area) through the installation of environmentally sensitive area fencing to avoid accidental incursion. Fencing will be installed under supervision of a qualified biologist.

d) **Less than Significant.**

Special-Status Wildlife

The project area is located within the Pacific Flyway along San Francisco Bay. Although specific migratory corridors in the vicinity of the project area are unknown, it can be assumed that native avian species pass overhead during spring and fall migrations. During construction, birds would be expected to easily avoid the project area due to the relatively small size of the project area compared to the open water habitat and largely undeveloped land of Point San Pablo surrounding the project area. Therefore, the project is expected to have a less-than-significant impact on the movements of resident and migratory native birds.

Special-Status Fish Species

Anadromous fish species have the potential to migrate through the nearshore waters of the study area, particularly salmonid smolts and juvenile green sturgeon emigrating from their

natal waters through the Sacramento-San Joaquin Delta to the Pacific Ocean. However, there are no streams supporting anadromous fish within the study area or immediate vicinity. Thus, presence of special-status fish species within the study area is likely to be temporary and transient in nature.

The project schedule dictates that in-water work would only occur from August 1 to November 30 to minimize the potential for impacts on special-status fish species. Scheduling in-water work for this period would limit the potential for the occurrence of migratory fish species by confining construction activities to periods outside of peak migration events.

Additionally, several BMPs, designed to protect aquatic species and habitat from the impacts of construction would be in effect during all in-water work. These are described and referenced above, and applicable here to ensure the protection of migration routes. Implementation of BMPs to protect water quality (Section 2.5.3), direct impacts of construction activities (Section 2.5.1), and the accidental spill of hazardous materials (Section 2.5.6), would avoid significant impacts, and the impact would be less than significant.

e) **No Impact.** The project does not require removal or limbing of trees; therefore, implementation of the project does not conflict with the City of Richmond Tree Ordinance.

f) **No Impact.** The project is not located within the permit area of an approved local, regional, or state habitat conservation plan; therefore, there is no impact.

3.2.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
V. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

a) **No Impact.** CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as a building, structure, site, object, or district listed in or determined to be eligible for listing in the California Register of Historical Resources (California Register), or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on architectural and structural resources. Archaeological resources, including archaeological resources that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed below under item (b).

Environmental Science Associates (ESA) conducted a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on May 10, 2018 (File No. 17-2669).[38] Records were accessed by reviewing the San Quentin, California 7.5-minute quadrangle base map. Additional research was conducted using files and literature at ESA. The records search reviewed the project site and a ½-mile radius in order to: (1) determine whether known cultural resources have been recorded within the vicinity of the project; (2) assess the likelihood of unrecorded cultural resources based on historical references and the distribution of environmental settings of nearby sites; and (3) develop a context for identification and preliminary evaluation of cultural resources. Included in the review was the Historic Properties Directory listing for Contra Costa County (most recent listing from May 2012). The Historic Properties Directory includes listings of the National Register of Historic Places (National Register) and the California Register of Historical Resources (California Register), and the most recent listings of the California Historical Landmarks and California Points of Historical Interest. Historic-period topographic maps and aerial imagery were also reviewed.

[38] Northwest Information Center (NWIC), California Historical Resources Information System at Sonoma State University, File No. 17-2669. On file at ESA, May 10, 2018.

There are no cultural resources listed in or eligible for listing in the California Register or National Register previously recorded within or immediately adjacent to the project site.

Three cultural resources were identified and recorded in the project site:[39]

- Point San Pablo Terminal Four Wharf
- Unnamed Sunken Hulk
- Richmond Belt Railroad Segment

Point San Pablo Terminal Four

Point San Pablo Terminal Four consists of the remains of a wood wharf supported by concrete, wood, and concrete-encased wood pilings, a warehouse, and an office building. Originally named the San Pablo Wharf, Terminal Four was constructed in 1902 by the owners of the Richmond Belt Line Railroad as one of two deep-port terminals supporting the Pacific Coast Oil Company oil refinery in Richmond. The wharf handled kerosene, gasoline, and asphalt.[40] Parr-Richmond Terminal Company purchased the wharf from the Richmond Belt Line Railroad in 1932 and sold it in 1935 to the City of Richmond, which rented the property back to the Parr-Richmond Terminal Company on a 50-year lease.

Beginning in the late 1930s, Terminal Four became home to numerous fish-reduction plants capitalizing on the sardine boom, not only on the wharf itself but also in permanently-moored converted ships. At the start of World War I, Terminal Four was used to load munitions for Navy ships while Port Chicago Naval Magazine was being constructed, and again after the Naval Magazine was destroyed in an explosion in 1944.

The decline of the sardine fishery in the 1950s led to the closing of the fish-reduction plants on Terminal Four. The Parr-Richmond Terminal Company relinquished the wharf back to the City in the late 1970s, which was subsequently modified to accept tank ships.

The wharf measures approximately 1,000 feet in length with a width ranging from 100 feet at the northern end to 200 feet at the southern end. There are approximately 2,150 standing timber piles and many more downed piles, decking, and other debris that have collapsed onto the floor of the bay. The structure is in a state of severe disrepair and sections of decking, piles, and other components of the former warehouse structure periodically break off and either float away or settle on the Bay floor.

The wharf supports a 12,000 square foot warehouse that is in severe disrepair. Several portions of the roof and exterior walls have collapsed, including a large segment on the northern end of the warehouse and a portion on the southern exterior wall. The majority of the windows and doors are missing or damaged. The warehouse is topped by a low

[39] ESA, Terminal 4 Wharf, Warehouse, and Pile Removal Project Point San Pablo, City of Richmond, Contra Costa County, Cultural Resources Survey Report. Prepared on behalf of California State Coastal Conservancy. October 2019.

[40] Sullivan, Steve, and James Allan, Report on a Marine Archaeological Survey of the Proposed Southampton Shoal Ship Channel Extension Terminal and Dredge Area. Prepared for Wickland Oil Martinez. On file NWIC (S-18902), July 1996.

pitch, side-gable asphalt composite roof. Exposed rafters are present along the roofline on the east and west façades. The exterior is clad with board and batten wood siding. Fenestration consists of flush wooden doors, single hung and horizontal sliding windows in wooden frames on the eastern, northern, and western façades, and inset horizontal sliding wood doors on all four façades.

Adjacent to the Terminal Four wharf is an approximately 1,110 square foot wood-framed office building constructed sometime between 1948 and 1958. The single-story building is supported on wood and concrete piers and has an irregular rectangular footprint, measuring approximately 34 by 38 feet, and is topped by a gable composite shingle roof that sags in the middle. Exposed rafters are present along the roofline on the east and west façades. The exterior is clad with drop channel flush wood siding, with several slats missing or pulling away from the structure on the south façade. The entrance is a one-pane glazed flush wooden door on the south side of the eastern façade. Fenestration consists of flush wooden doors, single hung windows in wooden frames on the eastern façade, and modern aluminum framed, horizontal sliding windows on the northern and southern façades. A potential addition is present on the west side of the building, with a gable composite shingle roof, exposed rafters, drop channel flush wood siding, and a single hung aluminum framed window on the western façade.

Point San Pablo Terminal Four does not appear to meet any of the criteria for eligibility for listing on the California Register, as either individual elements or as a larger site. Although associated with the industrial development of the City of Richmond, the wharf and associated buildings do not reflect significant associations with the economic development of the area, nor do they represent important events in history (criterion 1). Nor did archival review identify any significant associations with important persons (criterion 2). The structures do not represent the craftsmanship of a master builder or style of construction (criterion 3), but rather are of vernacular construction with little architectural distinction. Finally, the structures do not have the potential to yield information important to history (criterion 4). Because the structures do not meet the criteria for eligibility, Terminal Four is not recommended as a historical resource for the purposes of CEQA.

Unidentified Sunken Hulk

The sunken hulk of a wood vessel that had been moored at the southern end of the Terminal Four wharf is observable at low tide. The hull measures approximately 180 feet long by 20 feet wide and, given the narrow width, is likely the remaining portion of a larger vessel below the water line. A 1938 aerial photograph shows four ships moored at the south end of the Terminal Four, three of which a 1944 survey identified as the *Golden Dawn* (210 feet long with 60-foot beam), the *Monitor* (264 feet long with 46-foot beam), and the *Peralta* (425 feet long with 54-foot beam). These three ships served as floating fish reduction plants for the fishing operations based on the Terminal Four wharf. The ships were removed or scuttled between 1953 and 1958 as the sardine fishing industry collapsed. Researchers identify the existing sunken vessel as potentially representing the remains of the *Golden Dawn*, a passenger ferry originally constructed in 1905 as the

steamer *San Francisco* to serve the Key System transit company between San Francisco and Oakland.[41] The Golden Gate Ferry Company later acquired the vessel and renamed it the *Golden Dawn*. After being retired from ferry service in 1937, the *Golden Dawn* was permanently moored to the Point San Pablo Terminal Four wharf and converted to a fish reduction plant.[42] Given the advanced state of disrepair, the sunken vessel cannot be positively identified as the *Golden Dawn*.

Historic vessels that may be eligible for listing in the California Register are categorized into five types: floating historic vessels, dry-berthed historic vessels, small craft (floating or displayed), hulks, and shipwrecks.[43] The latter two categories are relevant to the sunken vessel: hulks are "substantially intact vessels that are not afloat, such as abandoned or laid up craft that are on a mud flat, beach, or other shoreline," while a shipwreck is a "submerged or buried vessel that has foundered, stranded, or wrecked.[44] This includes vessels that exist as intact or scattered components on or in the sea bed, lake bed, river bed, mud flats, beaches, or other shorelines, excepting hulks."[45] Using the above definitions, the unnamed sunken vessel identified in the project site is considered a hulk because the vessel had been permanently moored and was then abandoned in place; as such, the hulk is classified as a structure rather than as an archaeological site. Structures are most often evaluated for their eligibility for listing in the California Register under criteria 1–3.

Although the sunken hulk cannot be positively identified as the *Golden Dawn*, for the purposes of this report the vessel is assumed to represent the remains of the former passenger ferry. The *Golden Dawn* was originally constructed as the steam ferry *San Francisco* for the Key System, a transit company founded by Francis Marion "Borax" Smith in 1903. The Key System provided electric streetcar service throughout the East Bay and ferry service to the San Francisco Ferry Building, and was the predecessor to Alameda-Contra Costa Transit. The *San Francisco* was sold in 1926 to the Golden Gate Ferry Company and converted to a diesel auto ferry. The converted ship was renamed the *Golden Dawn*, and provided service from Berkeley to the Hyde Street Pier in San Francisco along with three other vessels: the *Golden Bear*, the *Golden Poppy*, and the *Golden State*. The vessel was retired from ferry service in 1937 and brought to Point San Pablo, where it was converted to a fish processing plant and permanently moored at the Terminal Four wharf. The vessel sank or was scuttled in the mid-1950s.

41 Sullivan, Steve, and James Allan, *Report on a Marine Archaeological Survey of the Proposed Southampton Shoal Ship Channel Extension Terminal and Dredge Area.* Prepared for Wickland Oil Martinez. On file NWIC (S-18902), July 1996.

42 Cox, John Parr. Parr Terminal: Fifty Years of History on the Richmond Waterfront, 1986.

43 U.S. Department of the Interior, National Park Service. National Register Bulletin 20: Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places. U.S. Government Printing Office, 1992.

44 U.S. Department of the Interior, National Park Service. National Register Bulletin 20: Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places. U.S. Government Printing Office, 1992.

45 U.S. Department of the Interior, National Park Service. National Register Bulletin 20: Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places. U.S. Government Printing Office, 1992.

Due to its association with the Key System and the development of ferry transportation in San Francisco Bay from 1903 to 1937, the *Golden Dawn* provides an essential link to an important event in the history of the state of California. Accordingly, the sunken hulk meets the criteria for eligibility under criterion 1 at the state level of significance and therefore is considered potentially eligible for listing in the California Register. Properties that meet the eligibility requirements must also possess integrity, the definition of which is based on seven aspects: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a historical resource will possess several, and typically most, of the aspects of integrity, which are described below.

- ***Location*** is defined as the place where a historical resource was constructed or the place where the historic event occurred. The *Golden Dawn* draws its significance from association with ferry service in San Francisco Bay; that association was severed when the vessel was converted to a fish reduction plant on Point San Pablo in 1937. Accordingly, the *Golden Dawn* does not retain integrity of location.

- ***Design*** is a combination of elements that create the form, plan, space, structure, and style of a property. Based on historical documentation, the *Golden Dawn* was altered twice in its history: during the conversion of the original steam-powered passenger ferry to a diesel-powered automobile ferry in 1926; and during the conversion to a fish processing plant in 1937. Further, aerial images indicate the vessel is extremely deteriorated, and only the lower portion of the hull remains. Based on the historical modifications to the vessel and current state of deterioration, the *Golden Dawn* does not retain integrity of design.

- ***Setting*** is the physical environment of a historical resource and refers to the character of the place in which the property played its historical role. Because the *Golden Dawn* is no longer a floating vessel as it was originally intended to operate, but is instead submerged off Point San Pablo, it no longer retains integrity of setting.

- ***Materials*** are the physical elements that were combined or deposited during a particular period of time, and in a particular pattern or configuration to form a historic property. Due to the major renovations conducted on the *Golden Dawn* and its current state of deterioration, the vessel no longer retains integrity of materials.

- ***Workmanship*** is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory, and is the evidence of the builders' labor and skill in constructing a structure. Due to the major renovations conducted on the *Golden Dawn* and its current state of deterioration, the vessel no longer retains integrity of workmanship.

- ***Feeling*** is a property's expression of the aesthetic or historic sense of a particular period of time, and results from a combination of physical features that, taken together, convey the property's historic character. Because the *Golden Dawn* was converted to a fish-processing plant and has deteriorated significantly, it no longer retains integrity of feeling.

- ***Association*** is the direct link between an important historic event or person and a historical resource. A historical resource retains association if it is directly linked to important events and is sufficiently intact to convey that relationship to an observer. Similar to feeling, association requires the presence of physical features that convey a property's historic character. The *Golden Dawn*'s association with the development

> of ferry transportation in San Francisco is established above, but the vessel was converted to a fish processing plant and permanently moored for decades. Owing to the physical conversion of the vessel and its deterioration due to immersion in a marine environment, the *Golden Dawn* no longer retains the physical features necessary to convey the vessel's historic character and to demonstrate its link with the development of ferry transportation in San Francisco Bay. For this reason, the *Golden Dawn* no longer retains integrity of association.

As indicated above, the sunken hulk *Golden Dawn* was found to have historical significance due to its association with the Key System and development of ferry transportation in San Francisco Bay from 1903–1937 (criterion 1); however, the evaluation of the vessel's integrity determined that it does not possesses integrity of location, design, setting, materials, workmanship, feeling, or association. Because the sunken hulk *Golden Dawn* does not possess any aspects of integrity, it is recommended as not eligible for listing in the California Register.

Richmond Belt Line Railroad Segment

The set of abandoned railroad tracks running down the center of Stenmark Drive adjacent to Point San Pablo Terminal Four are associated with the Richmond Belt Line Railroad, which was constructed in 1902 to serve the Pacific Coast Oil Company. The railroad originally extended along the north side Point San Pablo to connect with the main lines of the transcontinental railroads.[46] In 1908, the Richmond Belt Line Railroad was extended along the west side of Point San Pablo to transport raw materials and finished products to the San Pablo Wharf and points further south.

The railroad segment has been previously recommended not eligible for listing in the California Register.[47] To summarize the previous evaluation, the Richmond Belt Line Railroad lacks the influence that would help convey a connection to the twentieth century development of transportation and is not eligible for listing under criterion 1. While the Richmond Belt Line Railroad was associated with local businessman Colonel William S. Rheem, the portion of the railroad that exists within the project site does not adequately reflect his major contribution to the development of Richmond and is not eligible for listing under criterion 2. The method of construction of the Richmond Belt Line Railroad was not unique or otherwise remarkable and is not eligible for listing under criterion 3. The segments of the Richmond Belt Line Railroad that remain will not likely yield information important to history and is not eligible for listing under criterion 4.

In addition, construction along the coastline has severely affected the Richmond Belt Line Railroad and portions are buried under pavement or have been demolished. As such, several elements of integrity, including design, workmanship, feeling, and association, have been compromised.

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46 Haydu, Damon, and Tobin Rodman, Department of Parks and Recreation form 523 for P-07-004593. On file, NWIC, February 2008.

47 Haydu, Damon, and Tobin Rodman, Department of Parks and Recreation form 523 for P-07-004593. On file, NWIC, February 2008.

For the reasons indicated above, the Richmond Belt Line Railroad is not eligible for listing in the California Register and does not qualify as a historical resource.

Point San Pablo Terminal Four Associated Features

There is one additional resource, a stone block office building, immediately adjacent to the project site; it will not be adversely affected by implementation of the project. There are also several additional buildings and structures on the east side of Stenmark Drive. None of these buildings or structures will be adversely affected by the project.

Summary

Three built-environment resources were recorded in the project site during survey, consisting of a wharf and associated structures, the sunken hulk of a fish processing plant, and a segment of the Richmond Belt Railroad. Archival review determined that none of these resources are recommended eligible for listing in the California Register, due to their lack of significant associations with events (criterion 1), individuals (criterion 2), architectural distinction (criterion 3), or information potential (criterion 4). As such, none of these resources is considered a historical resource for the purposes of CEQA. The project would not cause impacts to historical resources and no mitigation would be required.

b) **Less than Significant Impact with Mitigation.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5 as well as unique archaeological resources as defined in Public Resources Code (PRC) Section 21083.2(g).

Records at the NWIC indicate that four reports are on file that contain information on the general vicinity of the project site. These reports include general overviews, site- specific surveys and excavations, and a maritime archaeological survey.

During his survey of the San Francisco Bay Area, University of California, Berkeley archaeologist Nels C. Nelson included Point San Pablo and described the peninsula as:

> "rough and barren, save for a few partly wooded canyons in the northeast. The west side is exposed to strong and unpleasant winds. Neither wood or water is obtainable in any great quantity. Nevertheless, in spite of all these seemingly untoward circumstances, there are here 14 known shell deposits, 6 of which are no mean proportion."[48]

[48] Banks, Peter M., *An Archaeological Reconnaissance of the Point San Pablo Project Area, Richmond, Contra Costa County.* On file NWIC (S-1935), February 1980.

Nelson described one of these sites, CA-CCO-280:

> "the shell deposit is small and insignificant and has a lot of earth in it. But that it is artificial and a former camp site admits of little doubt. The site is located about 30 rods [500 feet] south of Point San Pablo on the San Francisco Bay side."[49]

In 1980, archaeologist Peter M. Banks conducted a surface survey of 40 acres of Point San Pablo to support the potential redevelopment of the area.[50] Banks was not able to re-located CA-CCO-280, stating that the area had undergone extensive industrial development since Nelson's survey and that CA-CCO-280 was located in an area now covered in fill. Banks also noted that subsurface deposits associated with the site could still exist.

Banks also identified a previously undocumented prehistoric site on the top of the hill (CA-CCO-420), as well as a historic-era artifact deposit.[51] Banks recommended that no additional work occur in the vicinity of CA-CCO-280 until additional archaeological investigation occur, such as an augering program, and that no development occur in the vicinity of CA-CCO-420.[52]

In 1996, Sea Surveyor Inc. and a maritime archaeologist from William Self Associates conducted an underwater archaeological survey of offshore areas that would be affected by construction of a ship channel, terminal area, and pipeline corridor.[53] The survey area extended from the Southampton Shoal Channel (south of the Richmond-San Rafael Bridge), ¾-mile north to the tip of Point San Pablo. The survey consisted of a geophysical survey using a marine magnometer and a side-scan sonar to identify features of potential cultural significance. Of the 51 acoustic and magnetic targets identified during the survey, five were considered potentially significant cultural resources. The archaeologist suggested that one of the targets (designated P-07-000506) could either be the wreck of the schooner Ringleader, which capsized in the area in 1869, or pile of pipe lost from a barge in the 1980s.[54]

In 1999, archaeologists from Holman and Associates[55] conducted test excavations and construction monitoring for an East Bay Municipal Utility District pipeline project that

49 Banks, Peter M., *An Archaeological Reconnaissance of the Point San Pablo Project Area, Richmond, Contra Costa County.* On file NWIC (S-1935), February 1980.

50 Banks, Peter M., *An Archaeological Reconnaissance of the Point San Pablo Project Area, Richmond, Contra Costa County.* On file NWIC (S-1935), February 1980.

51 Banks, Peter M., *An Archaeological Reconnaissance of the Point San Pablo Project Area, Richmond, Contra Costa County.* On file NWIC (S-1935), February 1980.

52 Banks, Peter M., *An Archaeological Reconnaissance of the Point San Pablo Project Area, Richmond, Contra Costa County.* On file NWIC (S-1935), February 1980.

53 Sullivan, Steve, and James Allan, Report on a Marine Archaeological Survey of the Proposed Southampton Shoal Ship Channel Extension Terminal and Dredge Area. Prepared for Wickland Oil Martinez. On file NWIC (S-18902), July 1996.

54 Allan, James, Department of Parks and Recreation form 523 for P-07-000507. On file, NWIC, August 1996.

55 Wiberg, Randy S., Cultural Resources Evaluation and Impact Mitigation Program for the Western Drive Pipeline Replacement Project near Point Molate, Contra Costa County, California. Prepared for East Bay Municipal Utility District. On file NWIC (S-22310), November 1999.

extended from the intersection of Western Drive and Interstate 580, northwest around Castro Point and Point Molate, through the Naval Fuel Supply Depot (formally Winehaven), and past Point Orient just inside the fenced corporation facility (and the current project site). The archaeologists completed test excavations at two shellmounds, one of which (CA-CCO-284) was an extensive deposit nearly 2 meters in depth. Neither site is in the vicinity of the current project site (more than 1 mile and 2.5 miles to the southeast). The archaeologists also conducted monitoring for the project, including monitoring just south of the recorded location of CA-CCO-280; no cultural materials were identified at that location.[56]

In 2015, archaeologists from AECOM surveyed portions of the current project site as part of a cultural resources inventory and evaluation of the Red Rock Warehouse pile removal project site on the north side of Point San Pablo.[57] The staging areas were noted as being either paved or hard-packed dirt that were used for storage or staging. No cultural materials were identified in the staging areas.

ESA cultural resource staff completed a pedestrian surface survey of the project site on May 10, 2018.[58] No archaeological resources or other evidence of prehistoric occupation and use of the project site was identified during the survey effort.

Summary

As a result of archival review, field survey, distribution of nearby archaeological sites, and the geologic and environmental setting, the archaeological sensitivity of the project site is considered low. While unlikely, given the general sensitivity of the project vicinity, the inadvertent discovery of redeposited archaeological resources cannot be entirely discounted, including in areas of artificial fill. Impacts to archaeological resources would be potentially significant. In the event that archaeological resources are encountered during ground disturbing activities, **Mitigation Measure CUL-1**, Inadvertent Discovery of Archaeological Resource, would reduce impacts to a less-than-significant level.

> **Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources.** If prehistoric or historic-era archaeological resources are encountered by construction personnel during project implementation, all construction activities within 100 feet shall halt until a qualified archaeologist, defined as one meeting the Secretary of the Interior's Professional Qualification Standards for archaeology, can assess the significance of the find. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil

56 Wiberg, Randy S., Cultural Resources Evaluation and Impact Mitigation Program for the Western Drive Pipeline Replacement Project near Point Molate, Contra Costa County, California. Prepared for East Bay Municipal Utility District. On file NWIC (S-22310), November 1999.

57 AECOM, Cultural Resources Inventory and Evaluation Report for the San Francisco Bay Creosote Removal and Herring Habitat Restoration Project. Prepared for California State Coastal Conservancy. On file NWIC (S-48112), December 2015.

58 ESA, Terminal 4 Wharf, Warehouse, and Pile Removal Project Point San Pablo, City of Richmond, Contra Costa County, Cultural Resources Survey Report. Prepared on behalf of California State Coastal Conservancy. October 2019.

("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, hand stones, or milling slabs); and/or battered stone tools, such as hammer stones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

The mitigation for archaeological resources shall include preservation in place, or, if preservation in place is not feasible, data recovery through excavation. If preservation in place is feasible, this may be accomplished through one of the following means: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource before building appropriate facilities on the resource site; or (4) deeding the resource site into a permanent conservation easement.

If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from and about the resource, prior to any excavation at the resource site. Treatment for most resources would consist of (but would not necessarily be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be affected by the project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

c) **Less than Significant Impact with Mitigation.** There is no indication that the project site has been used for burial purposes in the recent or distant past. While unlikely, the inadvertent discovery of redeposited human remains cannot be entirely discounted, including in areas of artificial fill. Impacts to human remains would be potentially significant. In the event that human remains are encountered during ground disturbing activities, **Mitigation Measure CUL-2**, Inadvertent Discovery of Human Remains, would reduce impacts to a less-than-significant level.

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains. If potential human remains are encountered, all work will halt within 100 feet of the find and the on-site construction crew will immediately contact the SCC. The SCC will contact the Contra Costa County coroner in accordance with PRC Section 5097.98 and Health and Safety Code Section 7050.5. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission (NAHC). As provided in PRC Section 5097.98, the NAHC will identify the person or persons believed most likely to be descended from the deceased Native American. The most likely descendent will make recommendations for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

3.2.6 Energy

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
VI. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Discussion

a, b) **Less than Significant.** As stated in the Project Description, the project involves demolition and removal of derelict structures; there would be no energy use related to operations or maintenance. Demolition and removal of large amounts of artificial fill, debris, and sources of contamination from the Bay would result in indirect energy consumption from construction vehicles (cars, trucks and boats) and the use of construction materials. Several different pieces of construction equipment (listed in Table 2-2) would be used for the project. Although the precise amount of construction-related energy demand cannot be predicted at this time, the primary energy demand during construction would occur from use of gasoline and diesel-powered mobile construction equipment and vehicles to transport workers, materials and debris to and from the construction sites. Electricity would also be used for construction lighting, field services, and electrically driven construction devices such as air compressors, generators, and other equipment. Although project construction would result in increased indirect energy consumption, the amount of transportation fuel and potential electricity use required for project construction is not considered an inefficient or wasteful use of energy as project-related demolition and removal would address goals established by several regulatory agencies related to protection and restoration of subtidal habitats in the San Francisco Bay Estuary.

Additionally, 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. During construction, the project would comply with state and local regulations (such as the National Energy Policy Act of 2005)[59] and would not obstruct any state or local plans (such as Element 8, Energy and Climate Change, of the *Richmond General Plan 2030*) for renewable energy or energy efficiency. For these reasons, the impact would be less than significant.

[59] 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.

3.2.7 Geology and Soils

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

Discussion

a.i) **No Impact.** No project components involve the addition of any buildings or structures that would directly or indirectly cause adverse effects related to fault rupture or otherwise contribute to the likelihood of fault rupture. The project site lies outside of any mapped Alquist-Priolo Earthquake Fault Zone, which delineate the surface traces of faults known by the California Geological Survey to be active. The Northern Hayward Section of the Hayward fault zone is the nearest earthquake fault zone, located approximately 4 miles to the northeast of the project site.[60] The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving surface fault rupture; no impact would occur.

[60] U.S. Geological Survey and California Geological Survey, 2006. Quaternary fault and fold database for the United States. Available online at http//earthquake.usgs.gov/hazards/qfaults/. Accessed on November 8, 2019.

a.ii) **No Impact.** The Northern Hayward Section of the Hayward fault zone is approximately 4 miles to the northeast of the project site. According to the ShakeMap that corresponds with the earthquake planning scenario generated by the United States Geological Survey (USGS), if a M_W 6.9 event were to occur on the Northern Hayward Section of the Hayward fault zone, the study area may experience strong to very strong ground shaking with moderate to heavy damage expected.[61] While the project is in an area that is subject to strong seismic groundshaking, project activities would not add to the existing risk and would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking; no impact would result.

a.iii) **No Impact.** The project site is within the San Francisco Bay, and the onshore portions are located in areas mapped as liquefaction hazard zones.[62] The onshore portion of the project is limited to staging activities and equipment storage. The piling and debris removal and habitat restoration proposed to take place in these areas would not increase the risk of seismic-related ground failure or place workers in unsafe situations, due to seismic-related ground failure, and therefore would not have the potential to expose people or structures to substantial adverse effects. Therefore, no impact would occur.

a.iv) **No Impact.** As mentioned previously, most of the project would occur in San Francisco Bay, and project sites are not located immediately adjacent to landslide-prone areas. Further, the onshore portion of the project is limited to a temporary staging and storage area located in a relatively flat, area on ground that is either paved or hard-packed dirt. project activities would not cause or increase the risk of landslides at the project site. Therefore, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. There would be no impact.

b) **Less than Significant.** The majority of the project footprint is in San Francisco Bay and would thus not be subject to soil erosion or the loss of topsoil. The project designs are intended to retain and encourage deposition of marine sediments and vegetation within the project footprints as a form of habitat restoration. Stormwater controls designed to reduce erosion would be required in onshore areas used for staging during construction, as discussed in greater detail in Hydrology and Water Quality. Therefore, the project would not result in substantial soil erosion or the loss of topsoil, a less-than-significant impact.

c) **No Impact.** The majority of the project footprint is in San Francisco Bay and would neither be subject to nor cause any ground instability, landslide, lateral spreading, subsidence, liquefaction or collapse. The on-land portions of the project are limited to

61 USGS, 2017. ShakeMap for M 6.9 Scenario Earthquake – Hayward (No), last updated June 8, 2017. Available online at https://earthquake.usgs.gov/scenarios/eventpage/bssc2014haywardno2011cfmellb_m6p9_se/executive.

62 Witter, Robert C., Keith L. Knudsen, Janet M. Sowers, Carl M. Wentworth, Richard D. Koehler, and Carolyn E. Randolph, 2006. Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, 2006. U.S. Geological Survey Open File Report 2006-1037.

brief use for construction staging and access and would neither result in nor be unduly subject to these forms of geological hazards. No impact would occur.

d) **No Impact.** As noted above, the project areas would be in San Francisco Bay and would involve removing derelict creosote-treated piles, planting vegetation, and placing artificial reef structures for habitat restoration. Project activities do not create substantial risks to life or property from expansive soils. No impact would occur.

e) **No Impact.** Project activities would not require sewers, septic tanks, or alternative waste water storage or disposal systems. No impact would occur.

f) **No Impact.** The only ground disturbance during project activities would occur in the upper layers of bay sediment, which are recently deposited and have low paleontological sensitivity. Therefore, the project would not directly or indirectly destroy a unique paleontological resource, site, or geologic feature.

3.2.8 Greenhouse Gas Emissions

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

Discussion

a) **Less than Significant.** During pile removal activities, greenhouse gas (GHG) emissions would be generated from a variety of sources, including construction equipment and on-road vehicles used for worker and construction material transport and removal of demolition debris. Following completion of demolition and construction activities, all emissions would cease.

BAAQMD does not have thresholds of significance for GHG emissions from construction, but has developed operational GHG thresholds, including an annual operational GHG emissions threshold of 1,100 metric tons (MT) of carbon dioxide (CO_2) equivalent (CO_2e) per year.[63] Based on guidance from the South Coast Air Quality Management District,[64] construction GHG emissions are typically amortized over the life of the project and the amortized annual emissions are considered along with the project's annual operational emissions for comparison with the 1,100 MT of CO_2e threshold. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is dependent on the potential infrared absorption and the lifetime, or persistence, of the gas molecule in the atmosphere. For this analysis, this operational emissions threshold is applied to construction GHG emissions. However, this is a very conservative application of the threshold, as the construction GHG emissions would cease at the completion of construction and would not continue to occur during the operational lifetime of the project.

GHG emissions from construction activities were calculated using CalEEMod as described in Section 3.2.3, Air Quality (details are available in Appendix B). Total GHG emissions from these activities would be approximately 480 MT of CO_2e, which would

63 BAAQMD, *California Environmental Quality Act: Air Quality Guidelines*, May 2017. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en.

64 South Coast Air Quality Management District, *Board Meeting Agenda Item No. 31, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans*, December 5, 2008. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2.

be below the threshold of 1,100 MT of CO_2e per year. Therefore, impacts from construction GHG emissions would be less than significant.

b) **Less than Significant.** The project site is located in the City of Richmond, which adopted its Climate Action Plan (CAP)[65] in 2016. The CAP serves as a roadmap for how the City will reduce GHG emissions and prepare for the impacts of climate change on public health, infrastructure, ecosystems, and public spaces in the community. The CAP also supports the community's goals and policies identified in the City's General Plan 2030. The CAP serves as the City's Qualified Greenhouse Gas Reduction Strategy.

The CAP includes eight objectives, with 40 strategies and 449 actions laid out to achieve them. Of these strategies and actions, the ones related to increasing diversion of construction and demolition (C&D) waste would apply to the project. The City implements actions related to diversion of C&D debris through RecycleMore, the regional recycling agency, which is tasked with ensuring Richmond and its neighboring cities achieve the solid waste diversion goals established by the State. RecycleMore has several programs aimed at helping residents, businesses, and institutions achieve zero waste by promoting waste diversion programs including C&D diversion and proper disposal of hazardous waste.

As detailed in Section 2.4.3 of the Project Description, pursuant to the current project designs and specifications, the contractor would prepare a Demolition and Bay Floor Debris Removal Plan which would include (among other things) procedures for complying with permit conditions, proposed locations for materials handling, sorting, and disposal. These procedures for sorting and disposal would ensure that the project is consistent with the CAP's goal to increase diversion of C&D waste and also consistent with the efforts of RecycleMore.

Therefore, although pile removal activities would result in temporary construction-related GHG emissions, the project would not be considered to conflict with the City of Richmond CAP. The project is not a land use development project, and therefore the other GHG reduction measures in the CAP would not be applicable to the project. In addition, as described in discussion (a) above, the project would generate construction emissions levels far below the BAAQMD annual operational GHG threshold which has been set to meet the requirements of Assembly Bill 32. The project would be consistent with applicable local plans, policies, and regulations for GHGs and would not conflict with the provisions of Assembly Bill 32, the applicable air quality plan, or any other State or regional plan, policy or regulation of an agency adopted for the purpose of reducing greenhouse gas emissions. Therefore, the project would result in a less-than-significant impact with respect to GHG emissions.

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65 City of Richmond, *Climate Action Plan*, adopted October 2016. Available at https://www.ci.richmond.ca.us/DocumentCenter/View/40636/CAP-combined?bidId=

3.2.9 Hazards and Hazardous Materials

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

Discussion

Creosote-treated wood

Creosote is an oily product distilled from crude coal tar that contains hundreds of chemical compounds. Historically, creosote was used to treat wood to make it more resistant to rot and thus more useful as support for piers, wharves, and other aquatic structures. However, the primary constituents of creosote are polycyclic aromatic hydrocarbons (PAHs) and alkylated PAHs which account for up to 90 percent of creosote mixtures.[66] PAHs that leach out of creosote-treated piles persist in the environment and are toxic to some organisms. Those organisms that come into direct, extended contact with creosote-treated piles may be adversely affected. Harmful levels of contact may occur if organisms feed on prey species inhabiting the surface of the piles or if organisms lay eggs directly on piles, as is the case with Pacific herring (*Clupea pallasi*). Because the majority of the piles at Terminal Four contain creosote-treated wood, their removal would bring immediate benefits to water quality and the natural habitats and Bay ecosystems.

66 World Health Organization, Concise International Chemical Assessment Document 62, *Coal Tar Creosote*, 2004.

As noted in the Project Description, The San Francisco Bay Regional Water Quality Control Board, National Marine Fisheries Service (NMFS), and BCDC have provided guidance for removing creosote-treated wood pilings in the Bay, and this guidance is incorporated to the project.

Discussion

a) **No Impact.** The project would not involve the routine transport, use, or disposal of hazardous materials. Creosote-treated piles and other materials would be transported and disposed of during the construction phase, discussed below in item b).

b) **Less than Significant.** Creosote-treated piles and other materials would be transported and disposed of during the construction phase. Cranes and excavators would transfer debris to material barges, which would be towed offsite for processing and disposal.

At these locations, the debris material would be dried, sorted by type and disposal requirements (e.g., concrete, creosote-treated wood, untreated wood, and miscellaneous metal), placed onto trucks and hauled offsite for recycling or disposal at permitted landfills in accordance with federal, state, and local regulations. The bulk of pile extraction and transportation is expected to be by barge. Creosote-treated wood would be disposed of at a Class II landfill (permitted to accept "designated" and nonhazardous wastes) and clean demolition debris would be disposed of at a Class III landfill (permitted to accept nonhazardous wastes) or recycled. Similarly, excavated spoils and demolition waste from land-based operations would be off-hauled by truck and disposed of at appropriate facilities.

During the demolition and construction phases, construction equipment and materials may include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures, which are all commonly used in construction. Relatively small amounts of the listed materials, which are not considered acutely hazardous, would also be transported, used, and disposed of during construction.

Implementation of the project would also involve the demolition and removal of existing structures. The demolition could release hazardous building materials. Numerous existing regulations require that demolition and construction activities that may disturb or require the removal of hazardous materials must be inspected and/or tested for the presence of hazardous materials. If present, the hazardous materials must be managed and disposed of in accordance with applicable laws and regulations, as further described below.

A Hazardous Materials Management Plan designed to address the hazardous materials listed above would be prepared as part of the project. As discussed in Section 2.5.6 of the Project Description, the Hazardous Materials Management Plan would, among other requirements, inventory the hazardous materials at the site, specify requirements applicable to treated wood and other equipment containing hazardous materials, and address materials brought to the site for the project. The Hazardous Materials

Management Plan requirements would be compliant with federal and state regulations regarding the handling, processing, hauling, and disposal of such hazardous materials.

Workers handling hazardous materials are required to adhere to U.S. Department of Labor Occupational Safety and Health Administration (Fed/OSHA) and California Occupational Safety and Health Administration (Cal/OSHA) health and safety requirements. Hazardous materials must be transported to and from the project area in accordance with U.S. Department of Transportation (USDOT) regulations, managed in accordance with the Hazardous Material Programs Division of the Contra Costa Heath Services Department regulations, and disposed of in accordance with RCRA and the California Code of Regulations at a facility that is permitted to accept the waste. Since compliance with existing regulations and programs are mandatory, project construction activities are not expected to create a potentially significant hazard to the public or the environment, a less-than-significant impact.

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

d) **Less than Significant.** The project site is listed on the Cortese List (Gov. Code, Section 65962.5). Construction staging associated with the project may occur within the Port of Richmond Terminal Four (Former United Molasses/PM-AG Leashold) site. Two underground storage tanks and eight aboveground storage tanks formerly containing agricultural products were removed from the site in the 1980s and 1990s, and the facility ceased operations in 1993. Petroleum products were also stored and used onsite. The RWQCB issued a cleanup order for the site in 2007.[67] An interceptor trench with petroleum product removal wells and pumps was installed in 2010, and in 2013-2014 contaminated soil was excavated from the site, including around a second underground storage tank discovered in 2009. Clean fill was placed within the excavated area to a depth of approximately 10 feet below ground surface.[68] Groundwater monitoring at the site began in 2007 and occurred until 2016, when the RWQCB granted that no further groundwater monitoring was required at the site because concentrations of petroleum hydrocarbons in the groundwater were below applicable environmental screening levels and residual concentrations were expected to degrade over time.[69] Since excavation of the contaminated soil, the beach along the site has been observed semi-annually pursuant to the RWQCB cleanup order. As of June 2019, petroleum product seeps have been observed on the northern end of the beach during low tides.[70]

67 California Regional Water Quality Control Board San Francisco Bay Region, Order No. R2-2007-0067, Site Cleanup Requirements port of Richmond Vopak North America Inc. United Molasses Company Port of Richmond Terminal 4, Richmond Contra Costa County, September 21, 2007.

68 Stantec, Final Soil Excavation Report Former United Molasses Leashold – Port of Richmond Terminal 4, Point San Pablo, Richmond, California, October 13, 2014.

69 San Francisco Bay Regional Water Quality Control Board, Concurrence with the Request for No Further Action, Former United Molasses Leasehold – Port of Richmond Terminal 4, Contra Costa County, May 25, 2016.

70 Stantec, Beach Observation Self-Monitoring Report First Half 2019, Former United Molasses Leasehold, Port of Richmond Terminal 4, July 8, 2019.

The project would not disturb the beach and would stage materials in remediated areas without additional ground disturbance. While some of the piles to be removed or partially removed may extend into the same geologic unit as is exposed on the beach during low tide, the debris management and turbidity management best management practices described in Sections 2.5.1 and 2.5.2 of the Project Description would reduce the potential for suspended materials from the sediment to cause a hazard to the public or the environment. The impact would not be significant.

e) **No Impact.** There are no airports within 2 miles of the project site. Therefore, no impact would occur.

f) **No Impact.** The project would not interfere with an adopted emergency response plan or emergency evacuation plan. Creosote-piling removal and the subsequent habitat restoration would not obstruct any roadways, as most activities related to the piling removal would occur from barges within San Francisco Bay waters. Roads would only be used for work commutes by construction personnel; transport of equipment, supplies, and materials to the project sites; and transport of wastes and recovered materials away from the project site. There would be no permanent modifications to road alignments, amount of traffic, or other changes to the environment that would interfere with an emergency response plan. Therefore, no impact would occur.

g) **No Impact.** According to the California Department of Forestry and Fire Protection Very High Fire Hazard Severity Zones (VHFHSZ) in the City of Richmond, the project site is mapped within a Non-VHFHSZ.[71] The project also would not indirectly or directly exacerbate wildfire risks. Accordingly, there would be no impact.

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[71] California Department of Forestry and Fire Protection, Very High Fire Hazard Severity Zones in LRA, Richmond, January 7, 2009.

3.2.10 Hydrology and Water Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
X. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion

a) **Less than Significant.** The project would occur within San Francisco Bay. The San Francisco Bay Basin Water Quality Control Plan (or Basin Plan) identifies water quality standards applicable to the San Francisco Bay waters.[72] The project site drains to the Central Basin hydrologic planning area. The following beneficial uses are identified for the Central Basin: industrial service supply, industrial process supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and endangered species, fish spawning, wildlife habitat, water contact recreation, noncontact water recreation, and navigation. The Central Basin does not meet water quality objectives for these beneficial uses for the following pollutants: DDT, dieldrin, PAHs, dioxin compounds, furan compounds, invasive species, mercury, PCBs, selenium, and trash.

[72] California Regional Water Quality Control Board San Francisco Region, *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan),* incorporating all amendments approved by the Office of Administrative Law as of May 4, 2017.

The project would include work within San Francisco Bay waters and alongside the edge of the bay. Once operational, the project would not contribute additional polluted runoff to the bay.

Construction. During removal and disposal of the creosote piles, multiple best management practices designed to reduce water quality impacts would be implemented. The best management practices are listed in Section 2.5.1 of this document. These include deployment of a turbidity curtain around pile removal locations, installation of a floating boom around work areas, a hazardous materials management plan, upland erosion and sediment controls, and use of a containment basin on the barge during transit of removed piles. A stormwater pollution prevention plan (SWPPP) would be required, and best management practices from the SWPPP would be implemented. Daily water quality monitoring (as described in Section 2.5.3) would also be conducted during construction to ensure that construction activities do not reduce water quality, including monitoring for suspended matter, petroleum products, and toxic substances. Implementation of the best management practices would reduce or avoid the risk of degrading water quality during construction, and result in less-than-significant impacts related to water quality.

Operation. Once operational, the project would not degrade surface or groundwater quality. The removal of creosote piles would reduce the release of pollutants into San Francisco Bay. No changes that would affect groundwater quantity or quality are proposed. The project would replace the existing shoreline protection with structures designed to protect the shoreline and encourage sediment deposition. Project operation therefore would not result in substantial adverse changes to surface or groundwater quality.

b) **No Impact.** The project would not result in changes to existing groundwater supplies or to groundwater recharge systems, nor would it impede any sustainable groundwater management of the basin. There would be no impact under this criterion.

c.i) **No Impact.** There are no streams or rivers at the project site. The project would not change existing drainage patterns of surface flows, rivers, or streams. The only land-based project activities are staging and stockpiling, clearing for construction access that would be revegetated, and removal of a currently degrading section of derelict decking over water. No new impervious area would be created. Thus, there would be no increase in on- or off-site erosion or siltation associated with changes in drainage patterns.

c.ii) **No Impact.** There are no streams or rivers at the project site and the project would not construct new impervious areas. There would be no changes to existing drainage patterns of surface flows, rivers, or streams due to the project. Therefore, the project would not result in any changes to the rate or amount of surface runoff in the project area and there would be no impact.

c.iii) **Less than Significant.** As described above, the project would not result in new impervious area and therefore the project would not create or contribute runoff from new

impervious areas. There would be no new permanent sources of runoff. A SWPPP would be implemented during the construction phase of the project to avoid generating substantial volumes of temporary polluted stormwater runoff. With implementation of best management practices in the SWPPP, the project would result in less-than-significant volumes of construction stormwater runoff.

c.iv) **No Impact.** As described above, no structures would be placed in the 100-year flood hazard areas or other locations that would impede or redirect flood flows. The only structures would be artificial reefs placed into the bay as a form of habitat enhancement. These would not affect flood flows. Therefore, no impact would occur.

d) **No Impact.** The project is almost entirely in the already inundated portions of San Francisco Bay. Only those portions that would be temporarily used for construction access and staging or stockpiling are on land. The project thus has very limited and temporary exposure to inundation by seiche, tsunami, or mudflow. Further, nothing in the project designs or related activities would do anything to increase risk or extent of inundation by seiche, tsunami, or mudflow. Therefore, no impact would occur.

e) **Less than Significant.** As discussed in item a), the project would implement the best management practices described in Section 2.5 to reduce or avoid water quality degradation, which would not conflict with or obstruct the San Francisco Bay Basin Plan. The project would not conflict with or obstruct a sustainable groundwater management plan because it would not affect groundwater.

3.2.11 Land Use and Planning

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XI. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Discussion

a) **No Impact.** The project involves removing large amounts of artificial fill, debris, and sources of contamination from the San Francisco Bay and shoreline, and enhancement of a degraded area of shoreline and associated intertidal and subtidal habitat. None of these project actions has the potential to physically divide an established community. Therefore, there would be no impact.

b) **No Impact.** The project site is designated by the Richmond General Plan 2030 and zoned under the City of Richmond Zoning Ordinance as Open Space.[73] The project would not change the open space nature of the site. Policy CN6.l of the City's General Plan 2030 specifically calls for the clean-up and reuse of contaminated sites to protect human and environmental health, and to "support the remediation and reuse of large, disturbed sites, such as...the Terminal [Four] site at Point San Pablo."[74]

Additionally, a two-year collaborative study, the San Pablo Peninsula Open Space Study, assessed the area's potential for regional open space.[75] Implementation of the project would not affect the potential use of the site as open space. For these reasons, there would be no significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

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[73] City of Richmond, Richmond General Plan 2030, Element 7 – Conservation Natural Resources and Open Space, April 25, 2012.

[74] City of Richmond, Richmond General Plan 2030, Element 7 – Conservation Natural Resources and Open Space, April 25, 2012.

[75] LSA Associates, Inc., Vallier Design Associates, Economic & Planning Systems, Charles I. Rauw Consulting Engineers. San Pablo Peninsula Open Space Study, May 2005.

3.2.12 Mineral Resources

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

Discussion

a) **No Impact.** The Surface Mining and Reclamation Act of 1975 (SMARA) (as mapped by the California Department of Conservation's Division of Mines and Geology) classifies the Terminal Four Wharf site as Mineral Resource Zone 1 (MRZ-1). Areas classified MRZ-l are "areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence".[76] Additionally, no project activities would result in the loss of mineral resources or affect the ability to access mineral resources, and no mineral resource extraction activities occur or have been known to occur within or around the project area. Therefore, no impact would occur.

b) **No Impact.** As stated above, no project activities would result in the loss of mineral resources or affect the ability to access mineral resources, nor is the site a locally important mineral resource recovery site delineated on local plans. Therefore, no impact would occur.

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[76] California Department of Conservation (CDC), Division of Mines and Geology, Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area, Special Report 146, 1987.

3.2.13 Noise

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XIII. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a) **Less than Significant with Mitigation.** Noise would primarily be generated during demolition and construction activities associated with the project that which would involve operating off-road construction equipment on the project site and transporting construction equipment and materials by barge. While all project-related construction activities on-shore would be limited to the daytime hours, as stated in the Project Description waterborne equipment could only be used in shallower areas during high tide conditions, which could occur at night (i.e., between the hours of 5:00 p.m. and 7:00 a.m.) or on weekends. Therefore, it is assumed that in-water construction activities may occur at any hour. The specific schedule for night and weekend construction work would be submitted in advance for review and approval by the lead engineer and applicable jurisdictional permitting agencies. Noise generated by the project would cease with the end of the construction activities.

Section 9.52.110b[77] of the City of Richmond Municipal Code provides maximum allowable noise levels from stationary construction equipment at adjacent residential, commercial and industrial uses for the daytime hours of 7:00 a.m. to 7:00 p.m. on weekdays and 9:00 a.m. to 8:00 p.m. on weekends and legal holidays. Project construction activities taking place on-shore would be limited to these daytime hours. The project site is located in an area that mostly consists of former industrial structures. Regarding sensitive receptors, the nearest residences are several miles away. The East Brother Light Station, a lighthouse that also serves as a bed and breakfast inn, is approximately 1,100 feet to the west.

Based on default noise emission reference levels from the Roadway Construction Noise Model, the loudest construction equipment to be used for landside project activities

[77] City of Richmond, California, Municipal Code Ch. 9.52.110: *Temporary Construction Activity*. (Ord. No. 14-11 N.S., § 2, 5-17-2011)

would be excavators, which generate peak noise levels of approximately 85 decibels at 50 feet. Even at a distance of one mile from the equipment, this noise level would attenuate to 45 A-weighted decibels (dBA), well below the most restrictive noise standards specified in Section 9.52.110b of the Richmond Municipal Code. Attenuated noise levels that would reach the residential receptors several miles away from the site would not be audible over existing daytime ambient noise levels at those locations.

While there are no specific restrictions or standards for nighttime construction activities, Section 9.52.100e of the Municipal Code requires that the exterior noise limits for any source in any zone other than a residential zone between the hours of 10:00 p.m. and 7:00 a.m. be reduced such that the noise level measured at the property line of a noise sensitive use does not exceed 50 dBA.[78] As discussed above, peak noise levels generated by the loudest construction equipment expected to be used for project construction would attenuate to 45 dBA, below the 50 dBA standard even at a distance of one mile from the equipment. As the in-water nighttime construction activity would take place several miles away from the nearest residential receptors, noise levels at those receptors would be even lower and consistent with standard in Section 9.52.100e of the City's Municipal Code. Therefore, this impact would be less than significant for residential receptors. Nighttime in-water construction noise would also affect the occupants of the East Brother Light Station. Existing ambient noise levels were measured from the eastern side of the island on January 11, 2020. The nighttime hourly Leq[79] was found to vary between 35 and 44.9 dBA between 10:00 p.m. and 7:00 a.m. Nighttime maximum construction noise levels of 85 dBA would attenuate to 53 dBA at this distance, exceeding the 50 dBA standard, and would be audible over the existing ambient noise level. Therefore, this would constitute a significant impact.

Implementation of **Mitigation Measure NOI-1**, Noise Reduction Techniques for Equipment Used in Nighttime Construction Activity, would reduce this impact to a less-than-significant level. With mitigation, project construction would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Therefore, construction-related impacts would be less than significant with mitigation.

There would be no permanent project components added to the environment with the ability to produce noise. Therefore, no operational impact would occur.

> **Mitigation Measure NOI-1: Noise Reduction Techniques for Equipment Used in Nighttime Construction Activity.** One or a combination of the following noise reduction techniques shall be implemented to reduce noise from nighttime construction activities to below 50 dBA at the East Brother Light Station:

78 City of Richmond, California, Municipal Code Ch. 9.52.100: *Alternative use of maximum noise limits by dBA levels*. (Ord. No. 1411 N.S., § 2, 5-17-2011; Ord. No. 1518 N.S., § 1, 6-19-2018.)

79 Leq is the equivalent continuous sound level in decibels.

- Directionally position construction equipment such that the exhaust faces away from the receptors of the East Brother Light Station. This measure would be expected to reduce noise levels by 2 to 3 dBA.
- Provide acoustically rated shielding around engines of construction equipment. This measure would be expected to reduce noise levels by 5 to 12 dBA depending on the proximity of shielding to the engines.
- Cranes shall be operated in ECO silent mode[80] during nighttime hours, as available. This measure would be expected to reduce noise levels by 3 to 5 dBA.

b) **Less than Significant.** Construction vibration would occur from the operation of construction equipment for landside activities. Equipment operated on the construction barge and materials transport to the sites by barge would not produce groundborne vibrations. Because much of the project construction would occur over the water, the vibration created by pile removal would primarily affect the Bay. The impacts of pile removal to wildlife in the Bay are discussed in Section 3.4, Biological Resources. Vibration generated from use of construction activities for landside activities would attenuate rapidly with distance and would be expected to be felt beyond 200 feet from the equipment. Due to the large distance of several miles separating the proposed construction activities at the Terminal Four site and the closest noise- or vibration-sensitive residential uses, vibration impacts from ground disturbance activities would be insignificant. For these reasons, the impact would be less than significant.

c) **No Impact.** As there are no airports within 2 miles of the project site, there would be no impact. As there are no private airstrips within 2 miles of the project site, there would be no impact.

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[80] If available, the "ECO silent" mode allows a crane to operate while regulating the engine speed such that it can be restricted to a predefined level, thus lowering noise emissions.

3.2.14 Population and Housing

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

Discussion

a) **No Impact.** The project involves removing derelict structures and enhancing the subtidal and intertidal habitat in the San Francisco Bay. None of these project activities have the ability to directly or indirectly induce substantial unplanned growth near the project site or in the Bay Area as a whole. Therefore, no impact would occur.

b) **No Impact.** The project would not require the removal or vacancy of any residences and thus would not displace any people. Additionally, the project would not displace existing homes and the construction of replacement housing at a new location would not be required. No impact would occur.

3.2.15 Public Services

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

Discussion

a) **No Impact.** As indicated above under Section XIV, Population and Housing, the project would not directly or indirectly induce population growth. Therefore, the project would not require the provision of new or physically altered governmental facilities or public services, and no related impacts would occur.

3.2.16 Recreation

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

Discussion

a) **No Impact.** The project would not increase the number of residences or businesses in the City of Richmond or surrounding communities, nor would it generate any demand for recreational facilities. During the course of project construction, crew workers might use nearby facilities for recreation or leisure activities. The nearest recreational facilities to the project site are the Point Molate Beach Park and the Point San Pablo Yacht Harbor, both in Richmond. However, a few workers temporarily using these facilities would not result in substantial physical deterioration, and no construction or expansion of existing recreational facilities would be required. For these reasons, there would be no impact.

b) **No Impact.** The project does not involve the construction or expansion of recreational facilities, nor would it require the construction or expansion of recreational facilities. No impact would occur.

3.2.17 Transportation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XVII. TRANSPORTATION — Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

Discussion

a) **Less than Significant.** As depicted in Figure 2-1, regional access to the project site is provided by Interstate 580 (I-580) and local access is provided by Stenmark Drive. Local access to the Port of Richmond Terminal 3 site (potential sorting site) is provided by Harbour Way S. Average daily traffic on I-580 near the project site (at the Richmond-San Rafael Bridge Toll Booth) and near the Port of Richmond Terminal 3 site (at the Harbour Way/Cutting Boulevard Interchange) is approximately 82,000 vehicles.[81]

Since this project involves demolition and removal of derelict structures, only limited operations or maintenance activities might occur related to periodic monitoring activities for about five years following completion of project construction. Such activities if required would result in infrequent and minimal vehicle trips. As such, the analysis below is focused on project construction activities, which would temporarily increase traffic volumes on local and regional roadways due to construction workers traveling to/from the project site and trucks hauling equipment and materials.

Project construction would occur over an approximately six-month period. Based on information developed for the project, the maximum crew size of between ten and 11 workers would travel to/from the project site in five vehicles, resulting in the addition of ten one-way vehicle trips (five inbound, five outbound) to Stenmark Drive and I-580. This low number of vehicle trips in relation to average daily traffic on I-580 is not anticipated to substantially affect traffic in the area.[82] Construction contractors are assumed to park within the boundaries of the project site. No new worker trips are assumed to be needed for the Port of Richmond Terminal 3 site to handle the sorting of off-hauled project debris.

[81] California Department of Transportation, 2018. 2017 Traffic Volumes on California State Highways. Available at: https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017; accessed on November 13, 2019.

[82] Daily traffic volumes on Stenmark Road and Harbour Way S are not available, but are assumed to be low considering that they are local-serving roadways providing access to limited destinations.

Peak truck activity at the project site would occur for up to three weeks for ERSP construction, when up to 29 one-way daily truck trips would be used to haul ERSP material and to transport miscellaneous equipment/materials (refer to Table 2-3 for average and peak daily truck trips). Peak truck activity at the Port of Richmond Terminal 3 site would occur during a five-week period, when disposed materials barged from the project site for sorting are transported to various nearby landfills in up to 14 one-way daily truck trips. In combination, the addition of 43 one-way daily truck trips would represent an increase in traffic on I-580 of less than one percent. The magnitude of these increases is within the range of typical daily variation in traffic levels (usually on the order of ± 5 percent) that might be expected on the major roadways serving the project site, and roadway operating conditions on these roadways would remain substantially similar to current conditions. The increase in vehicles on the road would be temporary, small in comparison to the average daily traffic volume, and would not significantly impact vehicle miles traveled or emergency access in the area. As a result, the impacts on traffic would be less than significant.

Regarding marine vessel traffic, periodically the Project site would be exposed to sustained intermittent wake wash from passing vessels. The SCC would require the contractor to coordinate directly with the U.S. Coast Guard and the owner/operator of such vessels (e.g., San Francisco Bay Ferry) to confirm whether vessels can pass the project site at lower speeds or otherwise adjust operations to reduce disruption of demolition activities. The SCC intends to coordinate directly with San Francisco Bay Ferry prior to Project construction regarding ferry service to Vallejo, the route of which passes between the Project site and the East Brother Light Station.

b) **Less than Significant.** The new CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Vehicle miles traveled, or VMT, is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

The newly adopted guidance provides that a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide. The SCC has not formally adopted updated transportation significance thresholds. The City of Richmond is currently engaged in this process and has not yet formally adopted its updated transportation significance thresholds or its updated transportation impact analysis procedures. Since the regulations of SB 743 have not been finalized or adopted by the City, the quantitative analysis of the project's contribution of traffic to study area roadways provided under Issue a) remains appropriate to determine the significance of a traffic impact. Therefore, impacts related to CEQA Guidelines section 15064.3, subdivision (b) would be less than significant.

c) **Less than Significant.** Project construction would not alter the physical configuration of the existing roadway network serving the area, and would not introduce unsafe design features. Stenmark Drive is closed to public access a few hundred feet south of Terminal Four for safety reasons. To accommodate construction vehicles and equipment, a portion of Stenmark Drive within the project site would be stabilized pursuant to California Department of Transportation (Caltrans) guidance.[83] The project also would not introduce uses (types of vehicles) that are incompatible with existing uses already served by the road system that serves the project site. Therefore, the project impact to traffic safety hazards would be less than significant.

d) **Less than Significant.** As described above, increased project-related traffic would not cause a significant increase in congestion; therefore, project-related traffic would not affect emergency access to the project site or any other surrounding location. The project would not require closures of public roads, which could inhibit access by emergency vehicles. For these reasons construction and operation would have a less-than-significant impact on emergency access.

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[83] Caltrans Highway Design Manual, Chapter 880 – Shore Protection – Erosion Control.

3.2.18 Tribal Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XVIII. TRIBAL CULTURAL RESOURCES —				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

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

On May 9, 2018, ESA contacted the Native American Heritage Commission (NAHC) to request a search of their Sacred Lands files and a list of local Native Americans who might have knowledge of cultural resources in the vicinity of the project site. In a letter response on May 15, 2018, the NAHC did not identify sacred lands within or near the project site and provided a list of six contacts who might have additional information about the project location. On June 28, 2018, on behalf of the SCC, ESA sent letters, via certified mail, to the six Native American representatives identified by the NAHC. The letters provided a brief description of the project and maps of the project site, and requested that the recipients share any information regarding potential project impacts to

historical resources, if they so desired. Kathy Perez from the Northern Valley Yokuts tribe responded by telephone that she would like a Native American monitor during excavation in native, undisturbed areas, if applicable.

As described in the Cultural Resources section above, ESA completed a records search at the Northwest Information Center (NWIC) on May 10, 2018 (File No. 17-2669)[84] and a pedestrian survey on May 10, 2018.[85] As a result of archival review, field survey, distribution of nearby archaeological sites, and the geologic and environmental setting, the archaeological sensitivity of the project site is considered low.

Based on the results of correspondence with the NAHC and the NWIC records search, no known tribal cultural resources listed or determined eligible for listing in the California Register, included in a local register of historical resources, or determined by the lead agency to be significant would be adversely affected by the project. However, if any previously unrecorded archaeological resources are identified during project implementation, particularly ground-disturbing construction activities, and are found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(2), any impacts to the resource resulting from the project could be potentially significant. Any such potential significant impacts would be reduced to a less-than-significant level through implementation of **Mitigation Measure CUL-1**, Inadvertent Discovery of Archaeological Resources, and **Mitigation Measure CUL-2**, Inadvertent Discovery of Human Remains.

> **Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources.** (refer to Section 3.2.5, Cultural Resources)
>
> **Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains.** (refer to Section 3.2.5, Cultural Resources)

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84 Northwest Information Center (NWIC), California Historical Resources Information System at Sonoma State University, File No. 17-2669. On file at ESA, May 10, 2018

85 ESA, Terminal 4 Wharf, Warehouse, and Pile Removal Project Point San Pablo, City of Richmond, Contra Costa County, Cultural Resources Survey Report. Prepared on behalf of California State Coastal Conservancy. October 2019.

3.2.19 Utilities and Service Systems

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XIX. UTILITIES AND SERVICE SYSTEMS — Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion

a, c) **No Impact.** As described in previous sections, the project would not result in an increase in population and thus would not create demand for water, wastewater treatment, storm water collection, or telecommunications facilities; nor would the proposed demolition and construction activities require relocation of any of these services. Water required for demolition and construction work would be minimal: water would be used for cleaning equipment, cooling in various engines and motors, and dust control. Energy use for the project would be limited to demolition and construction activities, and would be minimal enough to not require the need for construction or relocation of new electric power or natural gas facilities. Therefore, no impact would occur.

b) **No Impact.** Once demolition and construction activities are complete the project would not generate any demand for water supplies. Water use during demolition and construction activities would be minimal (e.g., for equipment maintenance and dust control) and could be provided from existing supplies. Consequently, there would be sufficient water supplies available to serve the project during normal, dry, and multiple dry years. No impact would occur.

d) **Less than Significant.** Waste materials from the project would include different kinds of piles, decking (including material from the old warehouse), Bay floor debris, and other demolition debris. The quantities of each of these materials are noted in the Project Description. Creosote-treated wood pilings and residual creosote would need to be

disposed of at a Class II landfill (permitted to accept "designated" and nonhazardous wastes) and clean demolition debris would be disposed of at a Class III landfill (permitted to accept nonhazardous wastes). As described in the project description, waste, including creosote-treated wood, would be taken to either Potrero Hills Landfill in Suisun City, Hay Road Landfill in Vacaville, Corinda Los Trancos (Ox Mountain) Landfill in Half Moon Bay, or Keller Canyon Landfill in Pittsburg, California.[86] **Table 3-4** shows the classification, daily capacity, total capacity, and remaining capacity of each of these landfills.

TABLE 3-4
LANDFILL CLASSIFICATION AND CAPACITY

Landfill	Classification	Daily Capacity (tons/day)	Total Capacity (cubic yards)	Remaining Capacity (cubic yards)
Potrero Hills[a]	III	4,330	83,100,000	13,872,000
Hay Road[b]	II, III	2,400	37,000,000	30,433,000
Keller Canyon[c]	II	3,500	75,018,280	63,408,410
Corinda Los Trancos[d]	III	3,598	60,500,000	22,180,000
	Totals	13,828	255,618,280	129,893,410

SOURCES:

[a] California Department of Resources and Recycling (CalRecycle), SWIS Facility Detail, Potrero Hills Landfill (48-AA-0075). Available online at https://www2.calrecycle.ca.gov/swfacilities/Directory/48-AA-0075/. Accessed November 25, 2019.

[b] CalRecycle, SWIS Facility Detail, Recology Hay Road (48-AA-0002). Available online at https://www2.calrecycle.ca.gov/swfacilities/Directory/48-AA-0002. Accessed October 30, 2019.

[c] CalRecycle, SWIS Facility Detail, Keller Canyon Landfill (07-AA-0032). Available online at https://www2.calrecycle.ca.gov/swfacilities/Directory/07-AA-0032/. Accessed on October 30, 2019.

[d] CalRecycle, SWIS Facility Detail, Corinda Los Trancos Landfill (Ox Mtn) (41-AA-0002). Available online at https://www2.calrecycle.ca.gov/swfacilities/Directory/41-AA-0002/. Accessed on October 30, 2019.

Because the project would generate a total of approximately 5,700 cubic yards of waste as well as approximately 3,600 cubic yards of spoils, and the combined total remaining capacity of the landfills is approximately 130 million cubic yards, there is sufficient permitted capacity to accommodate the project's solid waste disposal needs. Additionally, the project would not generate solid waste in excess of State or local standards, or impair the attainment of solid waste reduction goals, such as Goal EC3 (Sustainable and Efficient Energy Systems), Policy EC3.3 (Solid Waste Reduction and Recycling) of the *Richmond General Plan 2030*.[87] For these reasons, the impact would be less than significant.

e) **Less than Significant.** The creosote-piling removal and disposal process has been drafted under guidance provided by the San Francisco RWQCB and the Bay Conservation and Development Commission (BCDC). The project plans and specifications include requirements for the construction contractor to comply with all

[86] Although the Potrero Hill Landfill in Suisun City is assumed to be the most likely destination (and thus was assumed for the air quality analysis) for waste from the project site, any of the four mentioned landfills listed here could be used for waste disposal.

[87] City of Richmond, Richmond General Plan 2030, Element 8 – Energy and Climate Change, April 25, 2012.

permit conditions and other regulations that are relevant to solid waste collection, transportation, and disposal. Thus, all project activities would comply with applicable federal, state, and local statutes and regulations related to solid waste. No impact would occur.

All of the landfills identified above are permitted for either one or both types of waste that would be generated by project construction (Class II or III). Section 5.408 of the 2016 California Green Building Standards Code requires all nonresidential construction and demolition projects to reuse or recycle at least 65 percent of materials generated. Consistent with the 2016 California Green Building Standards Code, the SCC would require contractors to provide plans for recovering, reusing, and recycling construction, demolition, and excavation wastes and compost plant material, where feasible.

Additionally, the project would be in compliance with Contra Costa Environmental Health, the Local Enforcement Agency (LEA) for solid waste in Contra Costa County. The goal of Contra Costa Environmental Health and their Solid Waste Program is "to protect the public health and safety of the citizens of Contra Costa County and our environment through the enforcement of minimum standards for the collection, handling, storage, and disposal of residential, commercial and industrial solid waste for the protection of air, water, and land from pollution and nuisance. The LEA is responsible for ensuring that all solid waste disposal facilities and medical waste generators are in compliance with applicable local, State, and Federal codes and regulations" (Contra Costa Health Services, 2019).[88] With compliance with these regulations, the impact would be less than significant.

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[88] Contra Costa Health Services, Solid Waste Program, 2019. Available online at https://cchealth.org/eh/solid-waste/. Accessed on October 25, 2019.

3.2.20 Wildfire

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XX. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Discussion

a-d) **No Impact.** According to the California Department of Forest and Fire Protection's Fire Hazard Severity Zones Maps, the project site is not within a Very High Fire Hazard Severity Zone.[89] Therefore, there would be no impacts related to wildfire.

[89] California Department of Forestry and Fire Protection, Very High Fire Hazard Severity Zones in LRA, Richmond, January 7, 2009.

3.2.21 Mandatory Findings of Significance

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

Discussion

a) **Less than Significant with Mitigation.** As described in Section 3.2.4, Biological Resources, with implementation of best management practices described in Section 2.5 of Chapter 2, *Project Description*, and Mitigation Measures BIO-1 through BIO-5, the project would not adversely affect fish or wildlife habitat, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare, or threatened species. Through implementation of Mitigation Measures BIO-1 through BIO-5, in addition to the project designs and associated environmental protection measures, including construction BMPs, avoidance and minimization, seasonal avoidance, and biological monitoring during and after construction, the brief and localized potential impacts to special-status species and their habitats would be reduced to less-than-significant levels. In the longer term, the removal of derelict structures and enhancing the subtidal and intertidal habitat in the San Francisco Bay would improve conditions for a range of species using the subtidal and intertidal habitats within and around the project area.

The project's potential effects on historic and archaeological resources are described in Section 3.2.5, Cultural Resources; three cultural resources were identified and recorded in the project site (Point San Pablo Terminal Four Wharf, Unnamed Sunken Hulk, Richmond Belt Railroad Segment). Archival review determined that none of the three resources are recommended eligible for listing in the California Register, due to their lack of significant associations with events (criterion 1), individuals (criterion 2), architectural distinction (criterion 3), or information potential (criterion 4). As such, none of these resources is considered a historical resource for the purposes of CEQA. Additionally, as a

result of archival review, field survey, distribution of nearby archaeological sites, and the geologic and environmental setting, the archaeological sensitivity of the project site is considered low, and there is no indication that the project site has been used for burial purposes. While unlikely, in the event that archaeological resources or human remains are encountered during ground disturbing activities, Mitigation Measures CUL-1 and CUL-2 would reduce impacts to a less-than-significant level, and the project would not eliminate important examples of the major periods of California history or prehistory.

> **Mitigation Measures BIO-1: Avoidance and Minimization of Impacts to Western Burrowing Owl, BIO-2: Avoidance and Minimization of Impacts to Roosting Bats, BIO-3: Avoidance and Minimization of Impacts to Suisun Marsh Aster, BIO-4: Use of Vibratory Pile Hammers, BIO-5: Avoid Impacts to Terrestrial Wetlands.** (refer to Section 3.2.4, Biological Resources)
>
> **Mitigation Measures CUL-1: Inadvertent Discovery of Archaeological Resources, CUL-2: Inadvertent Discovery of Human Remains.** (refer to Section 3.2.5, Cultural Resources)

b) **Less than Significant with Mitigation.** As described in the preceding sections, the project has the potential to cause significant impacts related to aesthetics, air quality, biological resources, cultural resources, tribal cultural resources, and noise. Mitigation measures have been identified that would reduce these impacts to less-than-significant levels. Overall, the project has limited impacts on the physical environment and most of the impacts associated with implementation of the project would occur during construction, which is anticipated to take six months or less, and thus would be short-term.

The potential for project-generated impacts to contribute to a significant cumulative impact would arise if they occur within the same geographic area. In addition to the geographic scope, cumulative impacts can be determined by the timing of the other projects relative to the project. Schedule is particularly important for construction-related impacts. For a group of projects to generate cumulative construction impacts, they must be temporally as well as spatially proximate.

The Point Molate Mixed-Use Development Project (Point Molate Project) is proposed by Winehaven LLC approximately one mile south of the project site. The Point Molate Project consists of the mixed-use development of approximately 80 acres of the approximately 413-acre Point Molate Site (of which approximately 271 acres is above water and 142 acres are submerged in the Bay) that includes a variety of residential and commercial uses, as well as supporting road and utility infrastructure.[90] The mixed-use community would include open space, adaptive re-use of historic cottages, adaptive re-use of the historic Winehaven buildings, and residential development. Approximately 180 acres of the Point Molate Project site would remain as open space that is enhanced with

[90] City of Richmond, Notice of Preparation of a Subsequent Environmental Impact Report (SEIR) and Public Scoping Meeting for the Point Molate Mixed-Use Development Project, July 12, 2019.

the incorporation of natural trails. Construction of the Point Molate Project is expected to take seven to nine years, starting in early 2021.[91]

The dates for construction of the Terminal Four Project are not yet known. Nonetheless, due to the Point Molate Project's long construction schedule, there is a potential that the construction phase for the two projects would overlap. An overlap in the construction schedule would not have significant effects on sensitive receptors related to traffic and air quality as there is a general lack of sensitive receptors present on Point San Pablo and the areas surrounding the project sites. Additionally, the project would have a relatively low number of vehicle trips (refer to Table 2-3) and a short construction schedule. The only sensitive receptor affected by noise from construction of the Terminal Four Project is the East Brother Light Station. That impact is associated with nighttime construction noise. It is unknown whether the Point Molate Project would involve nighttime construction; however, East Brother Light Station is over one mile away from the Point Molate Project site, a distance that would attenuate construction noise impacts. Consequently, the likelihood that the two projects could create significant cumulative noise impacts is considered low. Mitigation Measure NOI-1 would be implemented to reduce noise related to nighttime construction activities, further reducing the potential for cumulative noise impacts.

The project's potentially significant impacts on aesthetics, biological, cultural, and tribal cultural resources would not be exacerbated by the Point Molate Project as they do not spatially overlap. Any potentially cumulative impacts would occur during construction as there are minimal operations and maintenance activities anticipated for the project.

Regarding cumulative air quality impacts, as stated in Section 3.2.3, Air Quality, in developing the thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts on the region's existing air quality conditions. Project construction emissions would not be anticipated to exceed BAAQMD significance thresholds with the implementation of air quality best management practices described in Section 2.5.1 and Mitigation Measure AQ-1. Therefore, the project would result in a less-than-significant cumulative impact with mitigation.

> **Mitigation Measure AQ-1: Construction Equipment Diesel Emissions Control.** (refer to Section 3.2.3, Air Quality)
>
> **Mitigation Measure NOI-1: Noise Reduction Techniques for Equipment Used in Nighttime Construction Activity.** (refer to Section 3.2.13, Noise)

c) **Less than significant with Mitigation.** As described above, the project has the potential to cause significant impacts related to aesthetics, air quality, biological, cultural, tribal

[91] City of Richmond, Notice of Preparation of a Subsequent Environmental Impact Report (SEIR) and Public Scoping Meeting for the Point Molate Mixed-Use Development Project, July 12, 2019.

cultural resources. Mitigation measures have been identified to reduce these impacts to less-than-significant levels. The project's potential to impact human beings is addressed in various sections of this Initial Study, including those that affect resources used or enjoyed by the public, residents, and others in the project area (such as aesthetics, public services, and recreation); those that are protective of public safety and well-being (such as air quality, geology and soils, greenhouse gas emissions, hydrology and water quality, and noise); and those that address community character and essential infrastructure (such as land use and planning, population and housing, transportation, and utilities). Although the project has the potential to have adverse effects on human beings related to a new source of substantial light or glare and a cumulatively considerable net increase of criteria pollutants, these impacts could be avoided or minimized through project design features, compliance with standard regulatory requirements, and implementation of Mitigation Measures AES-1 and AQ-1. As such, project impacts to human beings would be less than significant with mitigation.

Mitigation Measure AES-1: Construction Lighting. (refer to Section 3.2.1, Aesthetics)

Mitigation Measure AQ-1: Construction Equipment Diesel Emissions Control. (refer to Section 3.2.3, Air Quality)

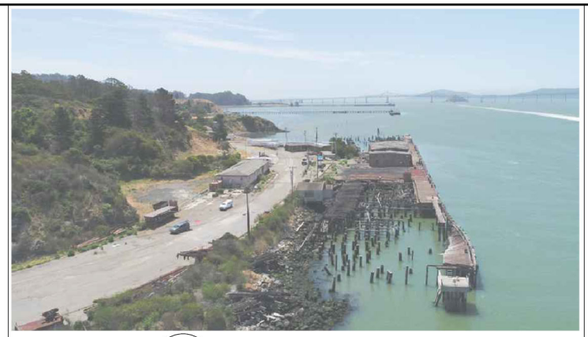
APPENDIX A

Photographs: Existing Conditions at Terminal Four Wharf

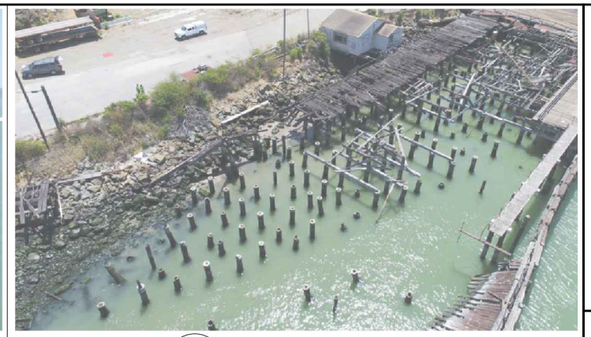
This appendix presents photographs of existing conditions at the Terminal Four Wharf, Warehouse, and Piling Removal Project Site.

A G03 G04 EXISTING CONDITIONS - PHOTOS
AERIAL OVERALL

B G03 G04 EXISTING CONDITIONS - PHOTOS
AERIAL, SOUTH END



C G03 G04 EXISTING CONDITIONS - PHOTOS
AERIAL, NORTH END



D G03 G04 EXISTING CONDITIONS - PHOTOS
AERIAL, NORTH END

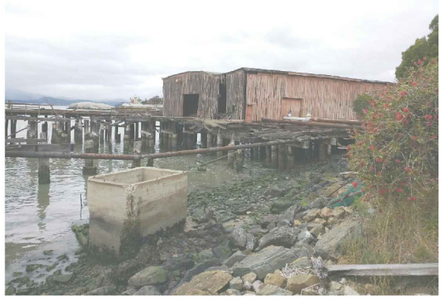
E G03 G04 EXISTING CONDITIONS - PHOTOS
NORTH END - WATER VIEW

F G03 G04 EXISTING CONDITIONS - PHOTOS
MAIN PIER - NORTH SIDE

G G03 G04 EXISTING CONDITIONS - PHOTOS
WAREHOUSE WHARF - WATER VIEW

H G03 G04 EXISTING CONDITIONS - PHOTOS
MAIN PIER - SOUTH SIDE

I G03 G04 EXISTING CONDITIONS - PHOTOS
AERIAL SOUTH, WATER VIEW



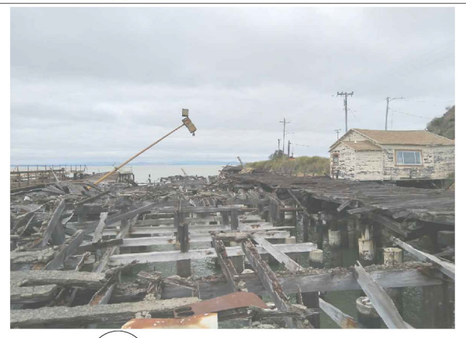
J G03 G04 EXISTING CONDITIONS - PHOTOS
SOUTHEAST - LAND VIEW

K G03 G04 EXISTING CONDITIONS - PHOTOS
SOUTH PILES - LAND VIEW

L G03 G04 EXISTING CONDITIONS - PHOTOS
WAREHOUSE BUILDINGS - LAND VIEW

M G03 G04 EXISTING CONDITIONS - PHOTOS
NORTH PILES - LAND VIEW

N G03 G04 EXISTING CONDITIONS - PHOTOS
NORTH DECK - LAND VIEW



O G03 G04 EXISTING CONDITIONS - PHOTOS
NORTH PILES AND OFFICE BUILDING

NOTE

1. PHOTOS SOURCE: ESA 2018

VERIFY SCALE
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

60% DRAFT
NOT FOR CONSTRUCTION

PREPARED BY:
ESA
550 Kearny Street
Suite 800
San Francisco, CA 94108
415.262.2300 phone

SHEET TITLE
EXISTING CONDITIONS - PHOTOS

PROJECT
TERMINAL FOUR WHARF, WAREHOUSE, AND PILING REMOVAL PROJECT

PREPARED FOR:
STATE OF CALIFORNIA
COASTAL CONSERVANCY
1515 CLAY STREET
10TH FLOOR
OAKLAND, CA

Coastal Conservancy

APPROVED	B. BATTALIO
DESIGNED	P. QUIROGA
DRAWN	P. QUIROGA
INCHARGE	J. TOILLIEZ C77499
SCALE	AS NOTED
DATE	JUNE 2019
SHEET	G-04

APPENDIX B
Air Quality Supporting Information

This appendix includes supporting information that was used for the analyses in Sections 3.2.3, Air Quality and 3.2.8, Greenhouse Gas Emissions.

Off-Road Construction Equipment Emissions - Criteria Air Pollutants (based on CalEEMod output)

Scenario	No. Construction workdays	Tons over Construction Period				Average Pounds per day			
		ROG	NOx	PM-10	PM-2.5	ROG	NOx	PM-10	PM-2.5
Off-road Construction Equipment - Uncontrolled	110	0.26	2.62	0.11	0.10	4.8	47.5	2.0	1.9
Workskiffs - gasoline						6.1	10.1	0.1	0.1
Tugboats - Tier 4						0.8	7.7	0.2	0.2
TOTAL						11.7	**65.4**	2.3	2.2
Significance Thresholds						54.0	54.0	82.0	54.0
Mitigated - Tier 4	110	0.06	0.67	0.01	0.01	1.2	12.2	0.1	0.1
TOTAL - Mitigated Off-road						8.1	30.0	0.4	0.4
Significance Thresholds						54	54	82	54.0

Cconstruction GHG Emissions (from CalEEMod output)

	CO_2e
Total CO_2e (metric tons)	480

Emissions from Tugboats

	Range	Min	Max
2 engines per tugboat (combined hp)	1200-2000	1200	2000
Conversion to KW		895	1491
	NOx	**HC**	**PM**
Tier 4 Emission Factors1 (g/KW-hr)	1.8	0.19	0.04
Total hours of tugboat operation	144	144	144
Total Emissions from tugboats as pounds	852.2	90.0	18.9
pounds per workday (110 workdays)	**7.7**	**0.8**	**0.2**
1. Source: Table 8 at https://www.dieselnet.com/standards/us/marine.php			

Hours of tugboat use:

Mobilization	10
Hauling debris (3 hrs per 300 ton load)	54
Demobilization	10
For repositioning barges - worst case	70
Total	144

Emissions from Work skiffs

Total hours of use assuming 8 hrs/day	1152		
Engine hp	75		
hp-hr	86400		
Gasoline engine emission factors1	**HC**	**NOx**	**PM**
(g/hp-hr)	3.53	5.82	0.06
Total emissions (gms)	304992	502848	5184
Total emissions (lbs)	672.4	1108.6	11.4
lbs/day	6.1	10.1	0.1
1. Source: Exhaust Emission Factors for Nonroad Engine Modeling -- Spark-Ignition: Report No. NR-010f, 2010			

Terminal 4 Demolition Project

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	1.00	1000sqft	4.20	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 factor based on https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Project construction area

Construction Phase - Project specific data

Off-road Equipment - Project specific info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Grading - Project info

Trips and VMT - Project info

Vehicle Trips - Operational Emissions not estimated

Energy Use -

Construction Off-road Equipment Mitigation - Tier 4F mitigation

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	36.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	18.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	PhaseEndDate	8/28/2020	8/15/2020
tblConstructionPhase	PhaseEndDate	9/16/2020	9/5/2020
tblConstructionPhase	PhaseEndDate	8/30/2021	11/14/2020
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tblConstructionPhase	PhaseStartDate	9/5/2020	8/30/2020
tblConstructionPhase	PhaseStartDate	8/5/2021	10/17/2020
tblConstructionPhase	PhaseStartDate	8/29/2020	8/16/2020
tblGrading	AcresOfGrading	0.00	4.00
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tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
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tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
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tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
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tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
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tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders

tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
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tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
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tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
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tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblTripsAndVMT	HaulingTripLength	20.00	78.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	350.00
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tblTripsAndVMT	VendorTripLength	7.30	20.00
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tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
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tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
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tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblVehicleTrips	ST_TR	2.49	0.00
tblVehicleTrips	SU_TR	0.73	0.00
tblVehicleTrips	WD_TR	6.83	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2608	2.6001	2.1180	5.3300e-003	0.0445	0.1092	0.1537	0.0119	0.1040	0.1159	0.0000	474.7059	474.7059	0.0856	0.0000	476.8468
2021	1.3800e-003	0.0151	0.0113	3.0000e-005	8.8400e-003	6.1000e-004	9.4500e-003	2.1800e-003	5.9000e-004	2.7700e-003	0.0000	2.8014	2.8014	3.4000e-004	0.0000	2.8099
Maximum	**0.2608**	**2.6001**	**2.1180**	**5.3300e-003**	**0.0445**	**0.1092**	**0.1537**	**0.0119**	**0.1040**	**0.1159**	**0.0000**	**474.7059**	**474.7059**	**0.0856**	**0.0000**	**476.8468**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0636	0.6649	2.4579	5.3300e-003	0.0445	7.8900e-003	0.0524	0.0119	7.8000e-003	0.0197	0.0000	474.7055	474.7055	0.0856	0.0000	476.8464
2021	3.5000e-004	4.0400e-003	0.0124	3.0000e-005	8.8400e-003	4.0000e-005	8.8800e-003	2.1800e-003	4.0000e-005	2.2200e-003	0.0000	2.8014	2.8014	3.4000e-004	0.0000	2.8099
Maximum	**0.0636**	**0.6649**	**2.4579**	**5.3300e-003**	**0.0445**	**7.8900e-003**	**0.0524**	**0.0119**	**7.8000e-003**	**0.0197**	**0.0000**	**474.7055**	**474.7055**	**0.0856**	**0.0000**	**476.8464**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**75.62**	**74.42**	**-16.01**	**0.00**	**0.00**	**92.78**	**62.43**	**0.00**	**92.51**	**81.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-2-2020	11-1-2020	1.6410	0.3039
2	11-2-2020	2-1-2021	1.2574	0.4348
		Highest	1.6410	0.4348

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	2.6958	2.6958	1.8000e-004	5.0000e-005	2.7162
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.1669	0.2402	7.5500e-003	1.8000e-004	0.4831
Total	**4.5300e-003**	**9.5000e-004**	**8.1000e-004**	**1.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.3251**	**2.8627**	**3.1878**	**0.0226**	**2.3000e-004**	**3.8228**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	2.6958	2.6958	1.8000e-004	5.0000e-005	2.7162
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.1669	0.2402	7.5500e-003	1.8000e-004	0.4831
Total	**4.5300e-003**	**9.5000e-004**	**8.1000e-004**	**1.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.3251**	**2.8627**	**3.1878**	**0.0226**	**2.3000e-004**	**3.8228**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Terminal 4 Demolition Project - Contra Costa County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mobilization	Demolition	8/2/2020	8/15/2020	6	12	
2	Install Turbidity Curtain	Site Preparation	8/16/2020	8/26/2020	5	8	
3	Remove Fender System	Grading	8/30/2020	9/5/2020	5	5	
4	Remove Utilities	Trenching	9/6/2020	9/12/2020	5	5	
5	Remove Piles	Trenching	10/17/2020	11/14/2020	6	25	
6	Remove Deck	Demolition	9/6/2020	10/28/2020	6	45	
7	Process Debris, Off-haul	Grading	9/9/2020	1/2/2021	6	100	
8	Remove Dolphin	Trenching	11/8/2020	12/5/2020	6	24	
9	Remove Bottom Debris	Trenching	11/29/2020	12/12/2020	5	10	
10	Remove Perimeter Infrastructure/Railroad Section	Trenching	12/6/2020	12/13/2020	5	5	
11	Remove Fuel Tanks	Demolition	12/14/2020	12/20/2020	5	5	
12	Install Slope Protection	Grading	10/18/2020	10/31/2020	5	10	
13	Remove Silt Curtain	Trenching	12/20/2020	12/26/2020	5	5	
14	Demobilization	Site Preparation	12/26/2020	12/29/2020	5	2	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Remove Utilities	Excavators	3	8.00	158	0.38
Remove Piles	Air Compressors	1	8.00	78	0.48

Remove Piles	Excavators	3	8.00	158	0.38
Remove Piles	Generator Sets	1	8.00	84	0.74
Remove Piles	Off-Highway Trucks	1	8.00	402	0.38
Remove Piles	Welders	1	8.00	46	0.45
Remove Deck	Generator Sets	1	8.00	84	0.74
Remove Deck	Off-Highway Trucks	1	8.00	402	0.38
Remove Deck	Welders	1	8.00	46	0.45
Process Debris, Off-haul	Air Compressors	1	8.00	78	0.48
Process Debris, Off-haul	Cranes	1	8.00	231	0.29
Process Debris, Off-haul	Generator Sets	1	8.00	84	0.74
Remove Dolphin	Cranes	1	8.00	231	0.29
Remove Bottom Debris	Air Compressors	1	8.00	78	0.48
Remove Bottom Debris	Excavators	3	8.00	158	0.38
Remove Bottom Debris	Generator Sets	1	8.00	84	0.74
Remove Bottom Debris	Off-Highway Trucks	1	8.00	402	0.38
Remove Bottom Debris	Welders	1	8.00	46	0.45
Remove Perimeter Infrastructure/Railroad Section	Air Compressors	1	8.00	78	0.48
Remove Perimeter Infrastructure/Railroad Section	Excavators	3	8.00	158	0.38
Remove Perimeter Infrastructure/Railroad Section	Generator Sets	1	8.00	84	0.74
Remove Perimeter Infrastructure/Railroad Section	Off-Highway Trucks	1	8.00	402	0.38
Remove Perimeter Infrastructure/Railroad Section	Welders	1	8.00	46	0.45
Remove Fuel Tanks	Air Compressors	1	8.00	78	0.48
Remove Fuel Tanks	Generator Sets	1		84	0.74
Remove Fuel Tanks	Off-Highway Trucks	6		402	0.38
Remove Fuel Tanks	Welders	1		46	0.45
Remove Fuel Tanks	Dumpers/Tenders	3		16	0.38

Remove Fuel Tanks	Tractors/Loaders/Backhoes	2		97	0.37
Install Slope Protection	Off-Highway Trucks	2	8.00	402	0.38
Install Slope Protection	Dumpers/Tenders	2	8.00	16	0.38
Remove Silt Curtain	Air Compressors	1	8.00	78	0.48
Remove Silt Curtain	Cranes	1	8.00	231	0.29
Remove Silt Curtain	Excavators	3	8.00	158	0.38
Remove Silt Curtain	Generator Sets	1	8.00	84	0.74
Remove Silt Curtain	Off-Highway Trucks	1	8.00	402	0.38
Remove Silt Curtain	Welders	1	8.00	46	0.45
Demobilization	Air Compressors	1	8.00	78	0.48
Demobilization	Cranes	1	8.00	231	0.29
Demobilization	Excavators	3	8.00	158	0.38
Demobilization	Generator Sets	1	8.00	84	0.74
Demobilization	Off-Highway Trucks	1	8.00	402	0.38
Demobilization	Welders	1	8.00	46	0.45
Remove Utilities	Off-Highway Trucks	1	8.00	402	0.38
Remove Deck	Air Compressors	1	8.00	78	0.48
Remove Piles	Cement and Mortar Mixers	0	0.00	9	0.56
Mobilization	Concrete/Industrial Saws	0	0.00	81	0.73
Mobilization	Excavators	3	8.00	158	0.38
Remove Utilities	Cranes	0	7.00	231	0.29
Remove Utilities	Forklifts	0	8.00	89	0.20
Remove Fender System	Excavators	3	8.00	158	0.38
Remove Piles	Pavers	0	0.00	130	0.42
Remove Piles	Rollers	0	0.00	80	0.38
Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Remove Fender System	Rubber Tired Dozers	0	0.00	247	0.40

Remove Utilities	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Remove Utilities	Generator Sets	1	8.00	84	0.74
Remove Fender System	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Remove Piles	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Install Turbidity Curtain	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Remove Fender System	Graders	0	0.00	187	0.41
Remove Piles	Paving Equipment	0	0.00	132	0.36
Install Turbidity Curtain	Rubber Tired Dozers	0	0.00	247	0.40
Remove Utilities	Welders	1	8.00	46	0.45
Remove Fuel Tanks	Concrete/Industrial Saws	0	0.00	81	0.73
Remove Deck	Concrete/Industrial Saws	0	0.00	81	0.73
Remove Fuel Tanks	Excavators	5	8.00	158	0.38
Remove Deck	Excavators	3	8.00	158	0.38
Install Slope Protection	Excavators	1	8.00	158	0.38
Process Debris, Off-haul	Excavators	0	8.00	158	0.38
Install Slope Protection	Graders	0	8.00	187	0.41
Process Debris, Off-haul	Graders	0	8.00	187	0.41
Remove Fuel Tanks	Rubber Tired Dozers	0	0.00	247	0.40
Remove Deck	Rubber Tired Dozers	0	0.00	247	0.40
Install Slope Protection	Rubber Tired Dozers	0	8.00	247	0.40
Process Debris, Off-haul	Rubber Tired Dozers	0	8.00	247	0.40
Demobilization	Rubber Tired Dozers	0	0.00	247	0.40
Install Slope Protection	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Process Debris, Off-haul	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Mobilization	Cranes	1	8.00	231	0.29
Mobilization	Air Compressors	1	8.00	78	0.48

Mobilization	Generator Sets	1	8.00	84	0.74
Mobilization	Off-Highway Trucks	1	8.00	402	0.38
Mobilization	Welders	1	8.00	46	0.45
Install Turbidity Curtain	Cranes	1	8.00	231	0.29
Install Turbidity Curtain	Air Compressors	1	8.00	78	0.48
Install Turbidity Curtain	Excavators	3	8.00	158	0.38
Install Turbidity Curtain	Generator Sets	1	8.00	84	0.74
Install Turbidity Curtain	Off-Highway Trucks	1	8.00	402	0.38
Install Turbidity Curtain	Welders	1	8.00	46	0.45
Remove Fender System	Air Compressors	1	8.00	78	0.48
Remove Fender System	Generator Sets	1	8.00	84	0.74
Remove Fender System	Off-Highway Trucks	1	8.00	402	0.38
Remove Fender System	Welders	1	8.00	46	0.45
Remove Utilities	Air Compressors	1	8.00	78	0.48

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Mobilization	8	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Install Turbidity Curtain	8	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Fender System	7	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Utilities	7	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Piles	7	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Deck	7	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Fuel Tanks	19	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Install Slope Protection	6	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Process Debris, Off-haul	4	10.00	2.00	350.00	10.80	20.00	78.00	LD_Mix	HDT_Mix	HHDT
Demobilization	8	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Perimeter Infrastructure/Railroad	7	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Silt Curtain	8	10.00	2.00	0.00	10.80	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Remove Dolphin	1	10.00	2.00	250.00	10.80	20.00	100.00	LD_Mix	HDT_Mix	HHDT
Remove Bottom Debris	7	10.00	2.00	320.00	10.80	20.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Mobilization - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0175	0.1575	0.1419	2.9000e-004		7.4100e-003	7.4100e-003		7.0200e-003	7.0200e-003	0.0000	24.7310	24.7310	6.3900e-003	0.0000	24.8908
Total	**0.0175**	**0.1575**	**0.1419**	**2.9000e-004**		**7.4100e-003**	**7.4100e-003**		**7.0200e-003**	**7.0200e-003**	**0.0000**	**24.7310**	**24.7310**	**6.3900e-003**	**0.0000**	**24.8908**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	2.5100e-003	6.3000e-004	1.0000e-005	2.2000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7498	0.7498	2.0000e-005	0.0000	0.7504
Worker	2.0000e-004	1.5000e-004	1.5100e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4175	0.4175	1.0000e-005	0.0000	0.4177
Total	**3.0000e-004**	**2.6600e-003**	**2.1400e-003**	**1.0000e-005**	**7.0000e-004**	**2.0000e-005**	**7.1000e-004**	**1.9000e-004**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**1.1672**	**1.1672**	**3.0000e-005**	**0.0000**	**1.1681**

3.2 Mobilization - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.4300e-003	0.0198	0.1697	2.9000e-004		4.4000e-004	4.4000e-004		4.4000e-004	4.4000e-004	0.0000	24.7310	24.7310	6.3900e-003	0.0000	24.8908
Total	**3.4300e-003**	**0.0198**	**0.1697**	**2.9000e-004**		**4.4000e-004**	**4.4000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**24.7310**	**24.7310**	**6.3900e-003**	**0.0000**	**24.8908**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	2.5100e-003	6.3000e-004	1.0000e-005	2.2000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7498	0.7498	2.0000e-005	0.0000	0.7504
Worker	2.0000e-004	1.5000e-004	1.5100e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4175	0.4175	1.0000e-005	0.0000	0.4177
Total	**3.0000e-004**	**2.6600e-003**	**2.1400e-003**	**1.0000e-005**	**7.0000e-004**	**2.0000e-005**	**7.1000e-004**	**1.9000e-004**	**2.0000e-005**	**2.1000e-004**	**0.0000**	**1.1672**	**1.1672**	**3.0000e-005**	**0.0000**	**1.1681**

3.3 Install Turbidity Curtain - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.1050	0.0946	1.9000e-004		4.9400e-003	4.9400e-003		4.6800e-003	4.6800e-003	0.0000	16.4873	16.4873	4.2600e-003	0.0000	16.5939
Total	**0.0117**	**0.1050**	**0.0946**	**1.9000e-004**	**0.0000**	**4.9400e-003**	**4.9400e-003**	**0.0000**	**4.6800e-003**	**4.6800e-003**	**0.0000**	**16.4873**	**16.4873**	**4.2600e-003**	**0.0000**	**16.5939**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	1.6800e-003	4.2000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4998	0.4998	2.0000e-005	0.0000	0.5002
Worker	1.3000e-004	1.0000e-004	1.0000e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.2783	0.2783	1.0000e-005	0.0000	0.2785
Total	**2.0000e-004**	**1.7800e-003**	**1.4200e-003**	**1.0000e-005**	**4.6000e-004**	**1.0000e-005**	**4.8000e-004**	**1.2000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.7782**	**0.7782**	**3.0000e-005**	**0.0000**	**0.7787**

3.3 Install Turbidity Curtain - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2900e-003	0.0132	0.1131	1.9000e-004		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	16.4873	16.4873	4.2600e-003	0.0000	16.5938
Total	**2.2900e-003**	**0.0132**	**0.1131**	**1.9000e-004**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**2.9000e-004**	**2.9000e-004**	**0.0000**	**16.4873**	**16.4873**	**4.2600e-003**	**0.0000**	**16.5938**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	1.6800e-003	4.2000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4998	0.4998	2.0000e-005	0.0000	0.5002
Worker	1.3000e-004	1.0000e-004	1.0000e-003	0.0000	3.2000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.2783	0.2783	1.0000e-005	0.0000	0.2785
Total	**2.0000e-004**	**1.7800e-003**	**1.4200e-003**	**1.0000e-005**	**4.6000e-004**	**1.0000e-005**	**4.8000e-004**	**1.2000e-004**	**1.0000e-005**	**1.4000e-004**	**0.0000**	**0.7782**	**0.7782**	**3.0000e-005**	**0.0000**	**0.7787**

3.4 Remove Fender System - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1200e-003	0.0000	2.1200e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1600e-003	0.0521	0.0538	1.0000e-004		2.5300e-003	2.5300e-003		2.4100e-003	2.4100e-003	0.0000	9.0373	9.0373	2.2500e-003	0.0000	9.0936
Total	**6.1600e-003**	**0.0521**	**0.0538**	**1.0000e-004**	**2.1200e-003**	**2.5300e-003**	**4.6500e-003**	**2.3000e-004**	**2.4100e-003**	**2.6400e-003**	**0.0000**	**9.0373**	**9.0373**	**2.2500e-003**	**0.0000**	**9.0936**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.4 Remove Fender System - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.1200e-003	0.0000	2.1200e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2500e-003	7.4700e-003	0.0642	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.0373	9.0373	2.2500e-003	0.0000	9.0936
Total	**1.2500e-003**	**7.4700e-003**	**0.0642**	**1.0000e-004**	**2.1200e-003**	**1.6000e-004**	**2.2800e-003**	**2.3000e-004**	**1.6000e-004**	**3.9000e-004**	**0.0000**	**9.0373**	**9.0373**	**2.2500e-003**	**0.0000**	**9.0936**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.5 Remove Utilities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.1600e-003	0.0522	0.0539	1.0000e-004		2.5300e-003	2.5300e-003		2.4200e-003	2.4200e-003	0.0000	9.0518	9.0518	2.2600e-003	0.0000	9.1082
Total	**6.1600e-003**	**0.0522**	**0.0539**	**1.0000e-004**		**2.5300e-003**	**2.5300e-003**		**2.4200e-003**	**2.4200e-003**	**0.0000**	**9.0518**	**9.0518**	**2.2600e-003**	**0.0000**	**9.1082**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.5 Remove Utilities - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2600e-003	7.4800e-003	0.0643	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.0518	9.0518	2.2600e-003	0.0000	9.1082
Total	**1.2600e-003**	**7.4800e-003**	**0.0643**	**1.0000e-004**		**1.6000e-004**	**1.6000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**9.0518**	**9.0518**	**2.2600e-003**	**0.0000**	**9.1082**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.6 Remove Piles - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0308	0.2607	0.2691	5.2000e-004		0.0127	0.0127		0.0121	0.0121	0.0000	45.1864	45.1864	0.0113	0.0000	45.4680
Total	**0.0308**	**0.2607**	**0.2691**	**5.2000e-004**		**0.0127**	**0.0127**		**0.0121**	**0.0121**	**0.0000**	**45.1864**	**45.1864**	**0.0113**	**0.0000**	**45.4680**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-004	5.2400e-003	1.3200e-003	2.0000e-005	4.5000e-004	4.0000e-005	4.9000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.5620	1.5620	5.0000e-005	0.0000	1.5633
Worker	4.2000e-004	3.0000e-004	3.1400e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8697	0.8697	2.0000e-005	0.0000	0.8703
Total	**6.3000e-004**	**5.5400e-003**	**4.4600e-003**	**3.0000e-005**	**1.4400e-003**	**5.0000e-005**	**1.4900e-003**	**3.9000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**2.4318**	**2.4318**	**7.0000e-005**	**0.0000**	**2.4335**

3.6 Remove Piles - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.2700e-003	0.0373	0.3210	5.2000e-004		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	45.1863	45.1863	0.0113	0.0000	45.4680
Total	**6.2700e-003**	**0.0373**	**0.3210**	**5.2000e-004**		**8.0000e-004**	**8.0000e-004**		**8.0000e-004**	**8.0000e-004**	**0.0000**	**45.1863**	**45.1863**	**0.0113**	**0.0000**	**45.4680**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-004	5.2400e-003	1.3200e-003	2.0000e-005	4.5000e-004	4.0000e-005	4.9000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.5620	1.5620	5.0000e-005	0.0000	1.5633
Worker	4.2000e-004	3.0000e-004	3.1400e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8697	0.8697	2.0000e-005	0.0000	0.8703
Total	**6.3000e-004**	**5.5400e-003**	**4.4600e-003**	**3.0000e-005**	**1.4400e-003**	**5.0000e-005**	**1.4900e-003**	**3.9000e-004**	**5.0000e-005**	**4.4000e-004**	**0.0000**	**2.4318**	**2.4318**	**7.0000e-005**	**0.0000**	**2.4335**

3.7 Remove Deck - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0554	0.4693	0.4844	9.4000e-004		0.0228	0.0228		0.0217	0.0217	0.0000	81.3354	81.3354	0.0203	0.0000	81.8424
Total	**0.0554**	**0.4693**	**0.4844**	**9.4000e-004**		**0.0228**	**0.0228**		**0.0217**	**0.0217**	**0.0000**	**81.3354**	**81.3354**	**0.0203**	**0.0000**	**81.8424**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7000e-004	9.4300e-003	2.3700e-003	3.0000e-005	8.1000e-004	7.0000e-005	8.8000e-004	2.3000e-004	7.0000e-005	3.0000e-004	0.0000	2.8116	2.8116	9.0000e-005	0.0000	2.8139
Worker	7.5000e-004	5.5000e-004	5.6500e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.8000e-003	4.7000e-004	1.0000e-005	4.9000e-004	0.0000	1.5655	1.5655	4.0000e-005	0.0000	1.5665
Total	**1.1200e-003**	**9.9800e-003**	**8.0200e-003**	**5.0000e-005**	**2.5900e-003**	**8.0000e-005**	**2.6800e-003**	**7.0000e-004**	**8.0000e-005**	**7.9000e-004**	**0.0000**	**4.3772**	**4.3772**	**1.3000e-004**	**0.0000**	**4.3804**

3.7 Remove Deck - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.0672	0.5778	9.4000e-004		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003	0.0000	81.3353	81.3353	0.0203	0.0000	81.8423
Total	**0.0113**	**0.0672**	**0.5778**	**9.4000e-004**		**1.4400e-003**	**1.4400e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**81.3353**	**81.3353**	**0.0203**	**0.0000**	**81.8423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7000e-004	9.4300e-003	2.3700e-003	3.0000e-005	8.1000e-004	7.0000e-005	8.8000e-004	2.3000e-004	7.0000e-005	3.0000e-004	0.0000	2.8116	2.8116	9.0000e-005	0.0000	2.8139
Worker	7.5000e-004	5.5000e-004	5.6500e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.8000e-003	4.7000e-004	1.0000e-005	4.9000e-004	0.0000	1.5655	1.5655	4.0000e-005	0.0000	1.5665
Total	**1.1200e-003**	**9.9800e-003**	**8.0200e-003**	**5.0000e-005**	**2.5900e-003**	**8.0000e-005**	**2.6800e-003**	**7.0000e-004**	**8.0000e-005**	**7.9000e-004**	**0.0000**	**4.3772**	**4.3772**	**1.3000e-004**	**0.0000**	**4.3804**

3.8 Process Debris, Off-haul - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0679	0.6478	0.5166	9.5000e-004		0.0343	0.0343		0.0329	0.0329	0.0000	82.5856	82.5856	0.0152	0.0000	82.9658
Total	**0.0679**	**0.6478**	**0.5166**	**9.5000e-004**	**0.0000**	**0.0343**	**0.0343**	**0.0000**	**0.0329**	**0.0329**	**0.0000**	**82.5856**	**82.5856**	**0.0152**	**0.0000**	**82.9658**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-003	0.1471	0.0299	4.8000e-004	0.0115	6.1000e-004	0.0121	3.1500e-003	5.8000e-004	3.7400e-003	0.0000	45.9022	45.9022	1.4800e-003	0.0000	45.9392
Vendor	8.1000e-004	0.0205	5.1700e-003	6.0000e-005	1.7600e-003	1.5000e-004	1.9100e-003	5.1000e-004	1.4000e-004	6.5000e-004	0.0000	6.1231	6.1231	2.0000e-004	0.0000	6.1280
Worker	1.6400e-003	1.1900e-003	0.0123	4.0000e-005	3.8900e-003	3.0000e-005	3.9100e-003	1.0300e-003	2.0000e-005	1.0600e-003	0.0000	3.4094	3.4094	8.0000e-005	0.0000	3.4115
Total	**7.0500e-003**	**0.1688**	**0.0474**	**5.8000e-004**	**0.0171**	**7.9000e-004**	**0.0179**	**4.6900e-003**	**7.4000e-004**	**5.4500e-003**	**0.0000**	**55.4347**	**55.4347**	**1.7600e-003**	**0.0000**	**55.4786**

3.8 Process Debris, Off-haul - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0105	0.0455	0.5606	9.5000e-004		1.4000e-003	1.4000e-003		1.4000e-003	1.4000e-003	0.0000	82.5855	82.5855	0.0152	0.0000	82.9657
Total	**0.0105**	**0.0455**	**0.5606**	**9.5000e-004**	**0.0000**	**1.4000e-003**	**1.4000e-003**	**0.0000**	**1.4000e-003**	**1.4000e-003**	**0.0000**	**82.5855**	**82.5855**	**0.0152**	**0.0000**	**82.9657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-003	0.1471	0.0299	4.8000e-004	0.0115	6.1000e-004	0.0121	3.1500e-003	5.8000e-004	3.7400e-003	0.0000	45.9022	45.9022	1.4800e-003	0.0000	45.9392
Vendor	8.1000e-004	0.0205	5.1700e-003	6.0000e-005	1.7600e-003	1.5000e-004	1.9100e-003	5.1000e-004	1.4000e-004	6.5000e-004	0.0000	6.1231	6.1231	2.0000e-004	0.0000	6.1280
Worker	1.6400e-003	1.1900e-003	0.0123	4.0000e-005	3.8900e-003	3.0000e-005	3.9100e-003	1.0300e-003	2.0000e-005	1.0600e-003	0.0000	3.4094	3.4094	8.0000e-005	0.0000	3.4115
Total	**7.0500e-003**	**0.1688**	**0.0474**	**5.8000e-004**	**0.0171**	**7.9000e-004**	**0.0179**	**4.6900e-003**	**7.4000e-004**	**5.4500e-003**	**0.0000**	**55.4347**	**55.4347**	**1.7600e-003**	**0.0000**	**55.4786**

3.8 Process Debris, Off-haul - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2500e-003	0.0120	0.0104	2.0000e-005		6.0000e-004	6.0000e-004		5.8000e-004	5.8000e-004	0.0000	1.6855	1.6855	3.0000e-004	0.0000	1.6931
Total	**1.2500e-003**	**0.0120**	**0.0104**	**2.0000e-005**	**0.0000**	**6.0000e-004**	**6.0000e-004**	**0.0000**	**5.8000e-004**	**5.8000e-004**	**0.0000**	**1.6855**	**1.6855**	**3.0000e-004**	**0.0000**	**1.6931**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.7200e-003	6.0000e-004	1.0000e-005	8.7200e-003	1.0000e-005	8.7300e-003	2.1500e-003	1.0000e-005	2.1600e-003	0.0000	0.9250	0.9250	3.0000e-005	0.0000	0.9257
Vendor	1.0000e-005	3.6000e-004	9.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1239
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Total	**1.3000e-004**	**3.1000e-003**	**9.2000e-004**	**1.0000e-005**	**8.8400e-003**	**1.0000e-005**	**8.8500e-003**	**2.1800e-003**	**1.0000e-005**	**2.1900e-003**	**0.0000**	**1.1159**	**1.1159**	**3.0000e-005**	**0.0000**	**1.1168**

3.8 Process Debris, Off-haul - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1000e-004	9.3000e-004	0.0114	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.6855	1.6855	3.0000e-004	0.0000	1.6931
Total	**2.1000e-004**	**9.3000e-004**	**0.0114**	**2.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.6855**	**1.6855**	**3.0000e-004**	**0.0000**	**1.6931**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	2.7200e-003	6.0000e-004	1.0000e-005	8.7200e-003	1.0000e-005	8.7300e-003	2.1500e-003	1.0000e-005	2.1600e-003	0.0000	0.9250	0.9250	3.0000e-005	0.0000	0.9257
Vendor	1.0000e-005	3.6000e-004	9.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1239
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Total	**1.3000e-004**	**3.1000e-003**	**9.2000e-004**	**1.0000e-005**	**8.8400e-003**	**1.0000e-005**	**8.8500e-003**	**2.1800e-003**	**1.0000e-005**	**2.1900e-003**	**0.0000**	**1.1159**	**1.1159**	**3.0000e-005**	**0.0000**	**1.1168**

3.9 Remove Dolphin - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4400e-003	0.0647	0.0254	7.0000e-005		2.6700e-003	2.6700e-003		2.4500e-003	2.4500e-003	0.0000	6.0831	6.0831	1.9700e-003	0.0000	6.1323
Total	**5.4400e-003**	**0.0647**	**0.0254**	**7.0000e-005**		**2.6700e-003**	**2.6700e-003**		**2.4500e-003**	**2.4500e-003**	**0.0000**	**6.0831**	**6.0831**	**1.9700e-003**	**0.0000**	**6.1323**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.2400e-003	0.1341	0.0275	4.4000e-004	0.0106	5.7000e-004	0.0112	2.9100e-003	5.4000e-004	3.4500e-003	0.0000	42.5515	42.5515	1.3300e-003	0.0000	42.5846
Vendor	2.0000e-004	5.0300e-003	1.2700e-003	2.0000e-005	4.3000e-004	4.0000e-005	4.7000e-004	1.2000e-004	4.0000e-005	1.6000e-004	0.0000	1.4995	1.4995	5.0000e-005	0.0000	1.5007
Worker	4.0000e-004	2.9000e-004	3.0100e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.8350	0.8350	2.0000e-005	0.0000	0.8355
Total	**4.8400e-003**	**0.1394**	**0.0318**	**4.7000e-004**	**0.0120**	**6.2000e-004**	**0.0126**	**3.2800e-003**	**5.9000e-004**	**3.8700e-003**	**0.0000**	**44.8860**	**44.8860**	**1.4000e-003**	**0.0000**	**44.9208**

3.9 Remove Dolphin - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.5000e-004	3.6900e-003	0.0312	7.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	6.0831	6.0831	1.9700e-003	0.0000	6.1323
Total	**8.5000e-004**	**3.6900e-003**	**0.0312**	**7.0000e-005**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**	**0.0000**	**6.0831**	**6.0831**	**1.9700e-003**	**0.0000**	**6.1323**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.2400e-003	0.1341	0.0275	4.4000e-004	0.0106	5.7000e-004	0.0112	2.9100e-003	5.4000e-004	3.4500e-003	0.0000	42.5515	42.5515	1.3300e-003	0.0000	42.5846
Vendor	2.0000e-004	5.0300e-003	1.2700e-003	2.0000e-005	4.3000e-004	4.0000e-005	4.7000e-004	1.2000e-004	4.0000e-005	1.6000e-004	0.0000	1.4995	1.4995	5.0000e-005	0.0000	1.5007
Worker	4.0000e-004	2.9000e-004	3.0100e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.8350	0.8350	2.0000e-005	0.0000	0.8355
Total	**4.8400e-003**	**0.1394**	**0.0318**	**4.7000e-004**	**0.0120**	**6.2000e-004**	**0.0126**	**3.2800e-003**	**5.9000e-004**	**3.8700e-003**	**0.0000**	**44.8860**	**44.8860**	**1.4000e-003**	**0.0000**	**44.9208**

3.10 Remove Bottom Debris - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0123	0.1043	0.1076	2.1000e-004		5.0600e-003	5.0600e-003		4.8300e-003	4.8300e-003	0.0000	18.0745	18.0745	4.5100e-003	0.0000	18.1872
Total	**0.0123**	**0.1043**	**0.1076**	**2.1000e-004**		**5.0600e-003**	**5.0600e-003**		**4.8300e-003**	**4.8300e-003**	**0.0000**	**18.0745**	**18.0745**	**4.5100e-003**	**0.0000**	**18.1872**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3500e-003	0.0777	0.0154	2.4000e-004	5.4200e-003	3.0000e-004	5.7100e-003	1.4900e-003	2.8000e-004	1.7700e-003	0.0000	22.7158	22.7158	8.3000e-004	0.0000	22.7366
Vendor	8.0000e-005	2.0900e-003	5.3000e-004	1.0000e-005	1.8000e-004	2.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6248	0.6248	2.0000e-005	0.0000	0.6253
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3479	0.3479	1.0000e-005	0.0000	0.3481
Total	**2.6000e-003**	**0.0799**	**0.0171**	**2.5000e-004**	**6.0000e-003**	**3.2000e-004**	**6.3100e-003**	**1.6500e-003**	**2.9000e-004**	**1.9500e-003**	**0.0000**	**23.6885**	**23.6885**	**8.6000e-004**	**0.0000**	**23.7100**

3.10 Remove Bottom Debris - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5100e-003	0.0149	0.1284	2.1000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	18.0745	18.0745	4.5100e-003	0.0000	18.1872
Total	**2.5100e-003**	**0.0149**	**0.1284**	**2.1000e-004**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**18.0745**	**18.0745**	**4.5100e-003**	**0.0000**	**18.1872**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3500e-003	0.0777	0.0154	2.4000e-004	5.4200e-003	3.0000e-004	5.7100e-003	1.4900e-003	2.8000e-004	1.7700e-003	0.0000	22.7158	22.7158	8.3000e-004	0.0000	22.7366
Vendor	8.0000e-005	2.0900e-003	5.3000e-004	1.0000e-005	1.8000e-004	2.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6248	0.6248	2.0000e-005	0.0000	0.6253
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3479	0.3479	1.0000e-005	0.0000	0.3481
Total	**2.6000e-003**	**0.0799**	**0.0171**	**2.5000e-004**	**6.0000e-003**	**3.2000e-004**	**6.3100e-003**	**1.6500e-003**	**2.9000e-004**	**1.9500e-003**	**0.0000**	**23.6885**	**23.6885**	**8.6000e-004**	**0.0000**	**23.7100**

3.11 Remove Perimeter Infrastructure/Railroad Section - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.1600e-003	0.0521	0.0538	1.0000e-004		2.5300e-003	2.5300e-003		2.4100e-003	2.4100e-003	0.0000	9.0373	9.0373	2.2500e-003	0.0000	9.0936
Total	**6.1600e-003**	**0.0521**	**0.0538**	**1.0000e-004**		**2.5300e-003**	**2.5300e-003**		**2.4100e-003**	**2.4100e-003**	**0.0000**	**9.0373**	**9.0373**	**2.2500e-003**	**0.0000**	**9.0936**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.11 Remove Perimeter Infrastructure/Railroad Section - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2500e-003	7.4700e-003	0.0642	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.0373	9.0373	2.2500e-003	0.0000	9.0936
Total	**1.2500e-003**	**7.4700e-003**	**0.0642**	**1.0000e-004**		**1.6000e-004**	**1.6000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**9.0373**	**9.0373**	**2.2500e-003**	**0.0000**	**9.0936**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.12 Remove Fuel Tanks - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0358	0.0470	7.0000e-005		1.8300e-003	1.8300e-003		1.7100e-003	1.7100e-003	0.0000	6.5223	6.5223	1.9000e-003	0.0000	6.5698
Total	**3.8700e-003**	**0.0358**	**0.0470**	**7.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**6.5223**	**6.5223**	**1.9000e-003**	**0.0000**	**6.5698**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.12 Remove Fuel Tanks - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9000e-004	3.8700e-003	0.0551	7.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	6.5223	6.5223	1.9000e-003	0.0000	6.5698
Total	**8.9000e-004**	**3.8700e-003**	**0.0551**	**7.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**6.5223**	**6.5223**	**1.9000e-003**	**0.0000**	**6.5698**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.13 Install Slope Protection - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6400e-003	0.0905	0.0684	1.8000e-004		3.7300e-003	3.7300e-003		3.4500e-003	3.4500e-003	0.0000	15.7851	15.7851	4.9900e-003	0.0000	15.9097
Total	**9.6400e-003**	**0.0905**	**0.0684**	**1.8000e-004**	**0.0000**	**3.7300e-003**	**3.7300e-003**	**0.0000**	**3.4500e-003**	**3.4500e-003**	**0.0000**	**15.7851**	**15.7851**	**4.9900e-003**	**0.0000**	**15.9097**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.0900e-003	5.3000e-004	1.0000e-005	1.8000e-004	2.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6248	0.6248	2.0000e-005	0.0000	0.6253
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3479	0.3479	1.0000e-005	0.0000	0.3481
Total	**2.5000e-004**	**2.2100e-003**	**1.7900e-003**	**1.0000e-005**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.9727**	**0.9727**	**3.0000e-005**	**0.0000**	**0.9734**

3.13 Install Slope Protection - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1200e-003	9.2000e-003	0.0906	1.8000e-004		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	15.7851	15.7851	4.9900e-003	0.0000	15.9097
Total	**2.1200e-003**	**9.2000e-003**	**0.0906**	**1.8000e-004**	**0.0000**	**2.8000e-004**	**2.8000e-004**	**0.0000**	**2.8000e-004**	**2.8000e-004**	**0.0000**	**15.7851**	**15.7851**	**4.9900e-003**	**0.0000**	**15.9097**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.0900e-003	5.3000e-004	1.0000e-005	1.8000e-004	2.0000e-005	2.0000e-004	5.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.6248	0.6248	2.0000e-005	0.0000	0.6253
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3479	0.3479	1.0000e-005	0.0000	0.3481
Total	**2.5000e-004**	**2.2100e-003**	**1.7900e-003**	**1.0000e-005**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**1.6000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.9727**	**0.9727**	**3.0000e-005**	**0.0000**	**0.9734**

3.14 Remove Silt Curtain - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.2900e-003	0.0656	0.0591	1.2000e-004		3.0900e-003	3.0900e-003		2.9300e-003	2.9300e-003	0.0000	10.3046	10.3046	2.6600e-003	0.0000	10.3712
Total	**7.2900e-003**	**0.0656**	**0.0591**	**1.2000e-004**		**3.0900e-003**	**3.0900e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**10.3046**	**10.3046**	**2.6600e-003**	**0.0000**	**10.3712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.14 Remove Silt Curtain - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4300e-003	8.2400e-003	0.0707	1.2000e-004		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	10.3046	10.3046	2.6600e-003	0.0000	10.3712
Total	**1.4300e-003**	**8.2400e-003**	**0.0707**	**1.2000e-004**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**10.3046**	**10.3046**	**2.6600e-003**	**0.0000**	**10.3712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0000e-005	1.0500e-003	2.6000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	3.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3124	0.3124	1.0000e-005	0.0000	0.3127
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1740	0.1740	0.0000	0.0000	0.1741
Total	**1.2000e-004**	**1.1100e-003**	**8.9000e-004**	**0.0000**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**8.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**0.4864**	**0.4864**	**1.0000e-005**	**0.0000**	**0.4867**

3.15 Demobilization - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9200e-003	0.0263	0.0236	5.0000e-005		1.2300e-003	1.2300e-003		1.1700e-003	1.1700e-003	0.0000	4.1218	4.1218	1.0700e-003	0.0000	4.1485
Total	**2.9200e-003**	**0.0263**	**0.0236**	**5.0000e-005**	**0.0000**	**1.2300e-003**	**1.2300e-003**	**0.0000**	**1.1700e-003**	**1.1700e-003**	**0.0000**	**4.1218**	**4.1218**	**1.0700e-003**	**0.0000**	**4.1485**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	4.2000e-004	1.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1250	0.1250	0.0000	0.0000	0.1251
Worker	3.0000e-005	2.0000e-005	2.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0696	0.0696	0.0000	0.0000	0.0696
Total	**5.0000e-005**	**4.4000e-004**	**3.6000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1945**	**0.1945**	**0.0000**	**0.0000**	**0.1947**

3.15 Demobilization - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7000e-004	3.2900e-003	0.0283	5.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	4.1218	4.1218	1.0700e-003	0.0000	4.1485
Total	**5.7000e-004**	**3.2900e-003**	**0.0283**	**5.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**4.1218**	**4.1218**	**1.0700e-003**	**0.0000**	**4.1485**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	4.2000e-004	1.1000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1250	0.1250	0.0000	0.0000	0.1251
Worker	3.0000e-005	2.0000e-005	2.5000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0696	0.0696	0.0000	0.0000	0.0696
Total	**5.0000e-005**	**4.4000e-004**	**3.6000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1945**	**0.1945**	**0.0000**	**0.0000**	**0.1947**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00	79	19	2

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.6643	1.6643	1.6000e-004	3.0000e-005	1.6785
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.6643	1.6643	1.6000e-004	3.0000e-005	1.6785
NaturalGas Mitigated	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0315	1.0315	2.0000e-005	2.0000e-005	1.0377
NaturalGas Unmitigated	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0315	1.0315	2.0000e-005	2.0000e-005	1.0377

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	19330	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0315	1.0315	2.0000e-005	2.0000e-005	1.0377
Total		**1.0000e-004**	**9.5000e-004**	**8.0000e-004**	**1.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**1.0315**	**1.0315**	**2.0000e-005**	**2.0000e-005**	**1.0377**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	19330	1.0000e-004	9.5000e-004	8.0000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0315	1.0315	2.0000e-005	2.0000e-005	1.0377
Total		**1.0000e-004**	**9.5000e-004**	**8.0000e-004**	**1.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**1.0315**	**1.0315**	**2.0000e-005**	**2.0000e-005**	**1.0377**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	12480	1.6643	1.6000e-004	3.0000e-005	1.6785
Total		**1.6643**	**1.6000e-004**	**3.0000e-005**	**1.6785**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	12480	1.6643	1.6000e-004	3.0000e-005	1.6785
Total		**1.6643**	**1.6000e-004**	**3.0000e-005**	**1.6785**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.2402	7.5500e-003	1.8000e-004	0.4831
Unmitigated	0.2402	7.5500e-003	1.8000e-004	0.4831

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	0.23125 / 0	0.2402	7.5500e-003	1.8000e-004	0.4831
Total		**0.2402**	**7.5500e-003**	**1.8000e-004**	**0.4831**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	0.23125 / 0	0.2402	7.5500e-003	1.8000e-004	0.4831
Total		**0.2402**	**7.5500e-003**	**1.8000e-004**	**0.4831**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Supplemental Material for Biological Resources

This appendix contains background information related to Section 3.2.4, Biological Resources.

TABLE BIO-1
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
FEDERAL AND STATE LISTED OR PROPOSED FOR LISTING			
Invertebrates			
Western bumble bee *Bombus occidentalis*	--/CE/Xerces IM	Inhabits open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Generalist forager that visits wide variety of plants. *B. occidentalis* records are primarily associated with plants in the Leguminosae (=Fabaceae), Compositae (=Asteraceae), Rhamnaceae, and Rosaceae families.	**Moderate.** Host plants from the family Asteraceae and Fabaceae in the project area and vicinity, including coyote brush, coastal sage brush, Italian thistle, and French broom. A CNDDB occurrence from 1963 was recorded ~1.5 miles from the project site on Point San Pablo.
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE/--/CI	Coastal scrub on rocky outcrops with broadleaf stonecrop (*Sedum spathulifolium*). Occurs in San Mateo County only.	**Not expected.** Project area outside of species' known range. No documented occurrences within 3 miles of the project area.
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT/--/CI	Native grasslands on serpentine soils in San Francisco Bay area. Host plants: foothill plantain (*Plantago erecta)* (primary); denseflower Indian paintbrush (*Castilleja densiflora*) and owl's clover (*C. exserta*).	**Not expected.** Serpentine soils and, therefore, nectar plants not present in project area. No documented occurrences within 3 miles of the project area.
Mission blue butterfly *Speyeria callippe callippe*	FE/--/CI	Coastal chaparral and grassland. Caterpillars feed on only lupine. Adults nectar on buckwheats, golden asters, wild hyacinths and other plants. Most occur on San Bruno Mountain; a small colony persists on Twin Peaks in San Francisco, and the Marin Headlands. Also present along Sweeney Ridge, ending at Milagra Ridge.	**Not expected.** Limited suitable habitat present in vicinity of project area and outside of species' known range. No documented occurrences within 3 miles of the project area.
Callippe silverspot butterfly *Plebejus icarioides missionensis*	FE/--/CI	Host plant is the johnny jump-up (*Viola pedunculata*), which grows in grasslands.	**Not expected.** Historical distribution included the East Bay from the Richmond area south to the Castro Valley in Alameda. The only remaining population in the East Bay occurs in Alameda County. No documented occurrences within 3 miles of the project area.
Fish			
Tidewater goby *Eucyclogobius newberryi*	FE/SSC/--	Coastal lagoons, estuaries, and marshes.	**None.** Extirpated from San Francisco Bay.
Delta smelt *Hypomesus transpacificus*	FT/SE/--	Endemic to the Sacramento-San Joaquin Delta distributed from Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, and Solano Counties. Spawning occurs in brackish-water river channels and sloughs of the Delta.	**Low.** Project area beyond current expected range of species. Overall lack of suitable habitat within the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Fish (cont.)			
Coho salmon, central California coast ESU *Oncorhynchus kisutch*	FE/SE/--	Larger rivers serve as migration pathways for adults; juveniles rear in smaller tributaries.	**None.** Extirpated from San Francisco Bay
Chinook salmon, Sacramento River winter-run ESU *Oncorhynchus tshawytscha*	FE/CE/--	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds.	**Moderate.** Limited foraging habitat for this species within the project area. No streams supporting spawning runs are present within or in the vicinity of the project area. There is a moderate potential for occurrence during migration between the Sacramento River watershed and the Pacific Ocean.
Chinook salmon, Central Valley spring-run ESU *Oncorhynchus tshawytscha*	FT/CT/--	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds.	**Moderate.** Limited foraging habitat for this species within the project area. No streams supporting spawning runs are present within or in the vicinity of the project area. There is a moderate potential for occurrence during migration between the Sacramento River watershed and the Pacific Ocean.
Steelhead, Central California Coast DPS *Oncorhynchus mykiss*	FT/-/-	Requires cold, freshwater streams with suitable gravel for spawning. Rears in rivers and tributaries to the San Francisco Bay.	**Moderate.** Limited foraging or spawning habitat for this species is present in the immediate vicinity of the Project site. The Petaluma River, Sonoma Creek, and the Napa River north of the project area are the nearest watersheds to support substantial runs of steelhead.
Steelhead, Central Valley DPS *Oncorhynchus mykiss*	FT/-/-	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from ocean through San Francisco Bay-Delta to freshwater spawning grounds.	**Moderate.** Limited foraging habitat for this species within the project area. No streams supporting spawning runs are present within or in the vicinity of the project area. There is a moderate potential for occurrence during migration between the Sacramento River watershed and the Pacific Ocean.
North American green sturgeon, Southern DPS *Acipenser medirostris*	FT/SSC/-	Adults found in coastal waters from Canada to Mexico. Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and Delta.	**Moderate.** This species migrates from the Pacific Ocean to spawning habitat in the Sacramento River watershed but may forage in or near the project area.
Longfin smelt *Spirinchus thaleichthys*	CT/ST, SSC/--	Found throughout the nearshore coastal waters and open waters of San Francisco Bay-Delta including the river channels and sloughs of the Delta. Spawns in the Delta.	**Moderate.** This species is documented consistently within open water habitat of Central San Francisco Bay, including the waters adjacent to the project area.
Eulachon *Thaleichthys pacificus*	FT/SSC/--	Spend most of their life at sea, but spawn in lower reaches of coastal rivers north of San Francisco Bay up to Alaska. Not reported from Bay Area streams.	**Low.** May be present infrequently or in low numbers in the Bay.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Amphibians			
California tiger salamander *Ambystoma californiense*	FT/ST/--	Aestivation sites occur in grasslands; breed in fresh emergent and seasonal wetlands, and slow-moving or receding streams. Needs 3-6 month hydroperiod to complete metamorphosis.	**Not expected.** Suitable habitat not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Foothill yellow-legged frog *Rana boylii*	--/CT, SSC/--	Partly-shaded, usually perennial, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**Not expected.** Suitable habitat not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
California red-legged frog *Rana draytonii*	FT/SSC/--	Streams, freshwater pools, and ponds with overhanging vegetation. Also found in woods adjacent to streams. Requires permanent or ephemeral water sources such as reservoirs and slow moving streams and needs pools of >0.5 m depth for breeding. May aestivate in rodent burrows or cracks during dry periods.	**Not expected.** Suitable habitat not present in the vicinity of the project area. Nearest CNDDB occurrence is from a pond on the San Rafael rock quarry, as well as in a swimming pool at McNear's Beach County Park in San Rafael, each approximately 2.5 miles across San Francisco Bay from the project area.
Reptiles			
Green sea turtle *Chelonia mydas*	FT/--/--	Open ocean and offshore pelagic environment.	**Not expected.** Project area is in San Francisco Bay, outside of species' usual habitat of open ocean. No documented occurrences within 3 miles of the project area.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/ST/--	Primarily associated with scrub and chaparral habitat. Uses grassland and woodland habitats adjacent to core scrub habitat. Require open areas to maintain optimal body temperature.	**Not expected.** Suitable habitat not found in the vicinity of the project area. Nearest occurrence is in the East Bay Municipal Utility District San Pablo Reservoir watershed. No documented occurrences within 3 miles of the project area.
Birds			
Western snowy plover *Charadrius alexandrines nivosus*	FT/SSC/--	Nest on coasts and estuaries on dune-backed beaches and salt pans at lagoons/estuaries.	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
California black rail *Laterallus jamaicensis coturniculus*	--/ST, FP/--	Nests and forages in tidal emergent wetland with pickleweed.	**Not expected.** Suitable habitat not found in the vicinity of the project area. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.
Ridgway's (formerly: California clapper) rail *Rallus longirostris obsoletus*	FE/SE, FP/--	Nests and forages in emergent wetlands with pickleweed, cordgrass, and bulrush.	**Not expected.** Suitable habitat not found in the vicinity of the project area. Nearest documented occurrence is in Wildcat Marsh, approximately 2.5 miles from the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Birds (cont.)			
Bank swallow *Riparia riparia*	--/ST/--	Largely found in riparian ecosystems, particularly rivers in the larger lowland valleys of northern California. Nesting colonies are located in vertical banks or bluffs in friable soils; colonies can support dozens to thousands of nesting birds.	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
California least tern *Sternula antillarum browni*	FE/SE, FP/--	Open beaches free of vegetation along the California coast.	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Mammals			
Southern sea otter *Enhydra lutris nereis*	FT/FP/--	Range from San Mateo County to Santa Barbara County, living in nearshore waters along the California coastline. Most adult female sea otters give birth to one pup each year. Birth peaks occur in the spring and fall, but pups may be born at any time of year.	**Not expected.** Outside of species' known range. No documented occurrences within 3 miles of the project area.
Pacific harbor seal *Phoca vitulina richardsii*	--/--/MMPA	Coastal waters, and throughout Bay-Delta.	**Moderate.** Species frequents the waters of the Oakland-Alameda Estuary and Central San Francisco Bay.
Bottlenose Dolphin *Tursiops truncatus*	--/--/MMPA	Coastal waters, and throughout Bay-Delta.	**Low.** Species frequents the waters of the Central San Francisco Bay, and may forage throughout the Oakland-Alameda Estuary.
California sea lion *Zalophus californianus*	--/--/MMPA	Coastal waters, and throughout Bay-Delta.	**Moderate.** Species frequents the waters of San Francisco Bay, predominately along the San Francisco shoreline. However, sea lions are known to forage throughout San Francisco and San Pablo Bay.
Gray whale *Eschrichtus robustus*	FDL/--/MMPA	Predominantly coastal waters, although occasional individuals enter the Bay-Delta and have been observed swimming up the Sacramento River and into the South Bay.	**Low.** Species is an infrequent visitor to San Francisco Bay.
Humpback whale *Megoptera noveangli*	FE/--/MMPA	Predominantly coastal waters, although occasional individuals enter the Bay-Delta	**Low.** Species is an infrequent visitor to San Francisco Bay.
Harbor porpoise *Phocoena phocoena*	--/--/MMPA	An inshore species inhabiting shallow, coastal waters and occasional large rivers, including San Francisco Bay-Delta	**Low.** The resident population has been steadily increasing in numbers and extending its foraging range within the Bay beyond the waters between the Golden Gate and Alcatraz Island. Observations have been made as far north as the Napa River mouth to the north and the Oakland-San Francisco Bay Bridge to the south.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Mammals (cont.)			
Bottlenose Dolphin *Tursiops truncatus*	--/--/MMPA	Found along the California coastline, bottlenose dolphins segregate into coastal or oceanic ecotypes with the coastal ecotype inhabiting waters within 1- Kilometer of shore normally between Baja, California and Point Conception. During El Niño events and in recent years, bottlenose dolphins have been observed as far as San Francisco Bay with individuals making occasional forays to the Golden Gate.	**Low.** Documented Central Bay presence is currently limited to waters between the Golden Gate and Alcatraz Island; individuals are capable of foraging over a larger area if prey fish are present.
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/SE, FP/--	Saline emergent marshlands with dense pickleweed. Will forage and take high tide refuge in adjacent transitional zones including grassland.	**Not expected.** Suitable habitat not found in the vicinity of the project area. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.
Plants			
Franciscan manzanita *Arctostaphylos franciscana*	FE/--/1B.1	Open, rocky, serpentine outcrops in chaparral. Strict serpentine endemic. February – April	**Not expected.** Serpentine soils not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Presidio manzanita *Arctostaphylos montana ssp. ravenii*	FE/SE/1B.1	Open, rocky, serpentine slopes in chaparral, coastal scrub, and coastal prairie. Affinity to serpentine soil: broad endemic. February – March	**Not expected.** Serpentine soils not found in the vicinity of the project area and otherwise suitable habitat is limited. No documented occurrences within 3 miles of the project area.
Pallid manzanita *Arctostaphylos pallida*	FT/SE/1B.1	Siliceous shale, sandy, or gravelly substrate; broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. Known from fewer than 10 occurrences in the Contra Costa Hills and Diablo Range. December – March	**Low.** Limited coastal scrub habitat in the vicinity of the project area, however, this species is normally found at higher elevations (370 - 480 m). Nearest documented occurrence is on Sobrante Ridge. Known from fewer than 10 occurrences in the Contra Costa Hills of the Diablo Range. No documented occurrences within 3 miles of the project area.
Marsh sandwort *Arenaria paludicola*	FE/FE/1B.1	Freshwater wetlands and wetland riparian habitats. Known remaining distribution limited to San Luis Obispo County and reintroduction sites in Santa Cruz, Nipomo and Los Osos. May – August	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Tiburon mariposa lily *Calochortus tiburonensis*	FT/ ST/1B.1	Valley and foothill grassland. Strict serpentine endemic. Known from only one occurrence at Ring Mtn. Preserve on the Tiburon Peninsula. March – June	**Not expected.** Project area is outside species' known range and serpentine soils not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Tiburon paintbrush *Castilleja affinis* var. *neglecta*	FE/ST/1B.2	Valley and foothill grassland on serpentine soils. Strict serpentine endemic. April – June	**Not expected.** Serpentine soils not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Soft bird's beak *Chloropyron molle* ssp. *molle*	FE/SR/1B.2	Coastal salt marshes and swamps. June – November	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Robust spineflower *Chorizanthe robusta* var. *robusta*	FE/--/1B.1	Coastal prairie, sandy soils. Only known extant occurrence is from Point Reyes National Seashore. June – August	**Not expected**. Outside of species' known range and suitable habitat is not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Sonoma spineflower *Chorizanthe valida*	FE/SE/1B.1	Coastal prairie (sandy). Thought extinct for 77 years; only known extant occurrence was rediscovered in 1980 at Pt. Reyes National Seashore. Experimental introduction work ongoing as of 2000. June – August	**Not expected.** Project area is outside species' known range. No documented occurrences within 3 miles of the project area.
Presidio clarkia *Clarkia franciscana*	FE/SE/1B.1	Coastal scrub, valley and foothill grassland. May – July	**Not expected**. Limited suitable habitat in the vicinity of the project area. Documented occurrences are limited to northern tip of San Francisco Peninsula and East Bay hills. No documented occurrences within 3 miles of the project area.
Marin western flax *Hesperolinon congestum*	FT/ST/1B.1	Chaparral, valley and foothill grassland in serpentine soils. April – July	**Not expected.** Suitable habitat (i.e., serpentine soils) no present in the study area. Not reported from the East Bay. Mostly occurs in Sonoma County and along the San Francisco Peninsula. No documented occurrences within 3 miles of the project area.
Santa Cruz tarplant *Holocarpha macradenia*	FT/SE/1B.1	Often clay or sandy soils on coastal prairie, coastal scrub, valley and foothill grassland. Documented from Alameda, Contra Costa, Marin, Monterey, and Santa Cruz counties; 1 reported record in Solano County. All extant occurrences are introduced. June – October	**Low.** Limited suitable habitat within the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Beach layia *Layia carnosa*	FE/SE/1B.1	Sand dunes. March - July	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
San Francisco lessingia *Lessingia germanorum*	FE/SE/1B.1	Coastal scrub (remnant dunes), sandy soils free of competing species. Known from only 4 occurrences at the Presidio and one on San Bruno Mountain. July – November	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Mason's lilaeopsis *Lilaeopsis masonii*	--/SR/1B.1	Freshwater or brackish marshes and swamps, riparian scrub. April – November	**Low.** Marginal suitable habitat found in the project area. No documented occurrences within 3 miles of the project area.
White-rayed pentachaeta *Pentachaeta bellidiflora*	FE/SE/1B.1	Cismontane woodland, valley and foothill grassland. Often in serpentine soils (Affinity: weak indicator). March – May	**Not expected.** Suitable habitat not found in the vicinity of the project area and no documented occurrences in CNDDB, Calflora or CNPS in the East Bay. No documented occurrences within 3 miles of the project area.
San Francisco popcorn flower *Plagiobothrys diffusus*	--/SE/1B.1	Coastal prairie, valley, and foothill grassland; historically on grasslands with marine influence. March – June	**Low.** Limited suitable grassland habitat available in the vicinity of the project area. The only East Bay record is an extant occurrence documented by CNPS in the Oakland East quad near Leona Regional Open Space. No documented occurrences within 3 miles of the project area.
North Coast semaphore grass *Pleuropogon hooverianus*	--/ST/1B.1	Open areas, mesic habitats. Broadleafed upland forest, meadows and seeps, North coast coniferous forest. Range is north of San Francisco Bay. April – June	**Not expected.** Suitable habitat not found in the vicinity of the project area, which is outside of the species' known range. No documented occurrences within 3 miles of the project area.
Adobe sanicle *Sanicula maritima*	--/SR/1B.1	Moist clay or ultramafic/serpentine soil in chaparral, coastal prairie, meadows, seeps, and valley and foothill grassland. Affinity to serpentine soils: weak indicator. February – May	**Not expected.** Limited suitable habitat in the vicinity of the project area. Nearest documented occurrence are historic (late 1800s) occurrences on Oakland and Alameda shorelines. No documented occurrences within 3 miles of the project area.
Tiburon jewelflower *Streptanthus glandulosus* ssp. *niger*	FE/SE/1B.1	Valley and foothill grassland on serpentine soils. Known from only two occurrences on the Tiburon Peninsula. May – June	**Not expected.** Outside of species' known range. No documented occurrences within 3 miles of the project area.
California sea-blite *Suaeda californica*	FE/--/1B.1	Coastal salt marshes and swamps, coastal dunes. July – October	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Two-fork clover *Trifolium amoenum*	FE/--/1B.1	Coastal bluff scrub, valley and foothill grassland. Sometimes serpentinite soil. April – June	**Not expected.** Presumed extirpated from San Quentin USGS quadrangle (CNPS, 2018), where the project area is located. No documented occurrences within 3 miles of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
STATE SPECIES OF SPECIAL CONCERN, FULLY-PROTECTED, AND STATE RARE PLANT RANK SPECIES			
Invertebrates			
Monarch butterfly *Danaus plexippus* (wintering sites)	--/--/wintering habitat protected	Eucalyptus groves (winter sites). Period of identification: Winter	**Low.** Eucalyptus groves present in vicinity of project area; however, no documented occurrences recorded there. Nearest documented occurrence is an extirpated population at McNear's Beach County Park in San Rafael, and a possibly extirpated population at China Camp State Park, northeast of San Rafael. Monarchs have recently overwintered at Point Pinole Regional Shoreline, which is approximately 5 miles from the project area.
Fish			
Sacramento perch *Archoplites interruptus*	--/SSC/--	Slow, vegetated waters of lakes and sloughs. Native to the Sacramento River and tributaries to the San Francisco Estuary.	**Low.** Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of water conditions.
Sacramento splittail *Pogonichthys macrolepidotus*	--/SSC/--	Open-water floodplains and vegetated tidal channels, sloughs and backwaters of larger watersheds, and smaller tidal tributaries to the Bay.	**Low.** Project area is on the fringe of this species known range, lack of suitable habitat within the project area.
Central Valley fall-run/late fall-run ESU Chinook salmon *O. tshawytscha.*	--/SSC/--	Ocean waters, Sacramento and San Joaquin Rivers; Migrates from Ocean through San Francisco Bay-Delta to freshwater spawning grounds	**Moderate.** Limited foraging habitat for this species is present. No streams supporting spawning runs are present within or in the vicinity of the project site. There is a moderate potential for incidental occurrence of this species if individuals stray from migration routes.
Pacific herring *Clupea Pallasii*	--/MLMA/--	Small, schooling marine fish that enters estuaries and bays to spawn. This species is known to spawn along the Oakland and San Francisco waterfronts and attach its egg masses to eelgrass, seaweed, and hard substrates such as pilings.	**Moderate.** Suitable spawning and rearing habitat existing with the project area. As such, species may be present year-round.
White sturgeon *Acipenser transmontanus*	--/SSC/--	Found in the estuaries of large Pacific coast rivers but migrate from the open ocean to spawn in freshwater.	**Low.** In estuaries, white sturgeon move into intertidal areas during high tides to feed. However, the large amounts of debris within the project area severely limits the quality of foraging habitat.
Pacific lamprey *Entosphenus tridentatus*	--/SSC/--	Found in estuaries across the Pacific from Japan to Baja Mexico. As an anadromous species, Pacific lamprey possess similar habitat requirements to salmonids.	**Low.** Pacific lamprey may utilize the deeper waters of the San Francisco Bay as a migration corridor between the Pacific Ocean and freshwater spawning habitat. However, they are unlikely to occur with nearshore waters of the project site.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Amphibians			
California giant salamander *Dicamptodon ensatus*	--/SSC/--	Inhabits moist and mesic coastal forests within and near clear, cold, rocky permanent or semi-permanent streams or seepages. Above ground, it is found under logs, bark, and rock, usually near water. Found in the South and North Coast Ranges from southern Santa Cruz County north to just beyond the Sonoma-Mendocino County border, and from north of San Francisco eastward to western Lake and Glenn Counties. Absent from the East Bay area.	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Reptiles			
Western pond turtle *Actinemys marmorata*	--/SSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks. Primarily in foothills and lowlands.	**Not expected.** Suitable habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Birds			
Cooper's hawk *Accipiter cooperii*	--/WL/--	Nests in riparian areas and oak woodlands, and hunts songbirds at woodland edges. Increasingly found nesting in residential neighborhoods.	**Low.** Suitable nesting trees are present in the vicinity of the project area, although more typical nesting site in riparian or oak woodland habitats, and residential street trees, are not absent. No documented occurrences within 3 miles of the project area.
Great egret *Ardea alba*	--/*/--	Colonial nester in tall trees near wetland foraging areas	**Low.** Marginally suitable nesting and roosting habitat is found in the vicinity of the project area in eucalyptus grove. Nearest documented rookery is 2.5 miles away on West Marin Island.
Great blue heron *Ardea herodias*	--/*/--	Colonial nester in tall trees near wetland foraging areas	**Low.** Marginally suitable nesting and roosting habitat is found in the vicinity of the project area in eucalyptus grove. No documented rookeries within 3 miles of the project area.
Short-eared owl *Asio flammeus*	--/SSC/--	Nests and forages in grasslands and marshes. Nests in on dry ground in depression concealed by vegetation.	**Not expected**. Suitable nesting habitat not present in the study area. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area
Western burrowing owl *Athene cunicularia hypugaea*	--/SSC/--	Nests and forages in low-growing grasslands that support burrowing mammals.	**Moderate.** Several 3-4" diameter burrows were identified inland and adjacent to rip rap within the project area, which could be potentially occupied by wintering or breeding owls. No documented occurrences for this species within 3 miles of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Birds (cont.)			
Northern harrier *Circus cyaneus*	--/SSC/--	Nests in coastal freshwater and saltwater marshes, nest and forages in grasslands.	**Not expected**. Suitable nesting habitat not present in the vicinity of the project site. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.
Yellow rail *Coturnicops noveboracensis*	--/SSC/--	Nests on damp ground or up to 15 cm above ground among grasses and sedges near shallow marshes and wet meadows, where only the highest tides inundate.	**Not expected.** Suitable nesting habitat not found in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Snowy egret *Egretta thula*	--/*/--	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	**Not expected.** Suitable nesting and roosting habitat not found in the vicinity of the project area. Nearest documented rookery is 2.5 miles away on West Marin Island.
White-tailed kite *Elanus leucurus*	--/FP/--	Nests in low elevation grassland, agricultural, wetland, oak woodland or savannah habitats. Nest tree/shrub species extremely variable from shrubs <3 m tall (e.g., *Atriplex* and *Baccharis*) to large trees >50 m tall (e.g., *Sequoia sempervirens* and *Picea sitchensis*).	**Not expected**. Suitable nesting habitat not present in the vicinity of the project site. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.
American peregrine falcon *Falco peregrinus anatum*	--/FP/--	Breeds near water with nearby vertical structure such as niches in steep banks, ledges and cliffs serving as nesting sites. Nests on skyscrapers and bridges in urban areas.	**Not expected.** Suitable nesting habitat not present in the vicinity of project area. Could fly through project area or forage for prey in the airspace over the project area. No occurrences in the vicinity of the project area.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	--/SSC/--	Breeds in moist saltmarsh habitats with dense, low cover.	**Not expected.** Suitable nesting habitat not present in the vicinity of the project area. No occurrences in the vicinity of the project area.
Caspian tern *Hydroprogne caspia*	--/*/--	Breeds in coastal estuarine, salt marsh and islands in rivers, salt lakes and bays. Nest sites are in open, flat, sandy or rocky areas.	**Not expected.** Suitable nesting habitat not present in the vicinity of the project area. No occurrences in the vicinity of the project area.
Alameda song sparrow *Melospiza melodia pusillula*	--/SSC/--	Inhabits brackish marshes of east San Francisco Bay, perching and nesting in dense vegetation along tidal channels.	**Not expected.** Suitable nesting habitat not present in the vicinity of the project area. Endemic to marshes south of the service area. Reported from the southern portion of the Richmond quad near Berkeley. No occurrences in the vicinity of the project area.
San Pablo song sparrow *Melospiza melodia samuelis*	--/SSC/--	Inhabits brackish marshes of San Pablo Bay, perching and nesting in dense vegetation along tidal channels. Particularly in areas of pickleweed, and gumplant.	**Not expected.** Suitable vegetation not present in the vicinity of the project area. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Birds (cont.)			
Black-crowned night heron *Nycticorax nycticorax*	--/*/--	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	**Low.** Marginally suitable nesting and roosting habitat is found in the vicinity of the project area in eucalyptus grove. Nearest documented rookery is 2.5 miles away on West Marin Island.
Osprey *Pandion haliaetus*	--/--/WL	Nests in open on tall structures including trees, snags, platforms, electrical towers, and cranes within 5-15 miles of fish foraging habitat.	**Present.** Documented nesting within the project area since 2014[1]; nesting adults present during site visit on May 24, 2018.[2]
Double-crested cormorant *Phalacrocorax auritus*	--/--/WL	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins. Also on urban bridges over open water.	**Not expected.** Suitable nesting and roosting habitat is not present in the study area. Nearest CNDDB occurrence is a colony that roosts on the Richmond-San Rafael Bridge, approximately 2.5 miles from the project area.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	--/SSC/--	Breeds in prairie wetlands, and deep water, emergent wetlands. Nearest breeding area to the San Francisco Bay Area are at Clear Lake in Lake County and throughout the Central Valley.	**Not expected.** Project area is outside of this species' known breeding range. No occurrences in the vicinity of the project area.
Mammals			
Pallid bat *Antrozous pallidus*	--/SSC/ WBWG High	A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. Roosts in buildings, caves, tree hollows, crevices, mines, and bridges.	**Moderate.** Suitable habitat may be present in undeveloped portions of Point San Pablo. No documented occurrences within 3 miles of the project area.
Townsend's big-eared bat *Corynorhinus townsendii*	--/SSC/WBWG High	Roost in caves, mines, tunnels with minimal disturbance but can also be found in abandoned open buildings or other human made structures. Recently detected in hollowed trees. Found in all habitats except subalpine and alpine habitats, and may be found at any season throughout its range. Very sensitive to human disturbance.	**Moderate.** Suitable roosting habitat in abandoned buildings within project area. No documented occurrences within 3 miles of the project area.
North American porcupine *Erethizon dorsatum*	--/*/--	Virtually all coniferous forests in the western U.S., especially in cutover or burned areas and meadows.	**Not expected.** Suitable habitat is not present in the vicinity of the project area. No occurrences in the vicinity of the project area.

[1] Brake, A.J., Citizen Scientist, Golden Gate Raptor Observatory, email communication November 11, 2019.
[2] ESA, 2018. Site visit conducted by Erika Walther, Wildlife Biologist for ESA. May 24, 2019.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Mammals (cont.)			
Silver-haired bat *Lasionycteris noctivagans*	--/*/WBWG Medium	Primarily a coastal and montane forest dweller. Roosts in dense foliage of trees, in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks. Forages over or near standing water. Uncommon in Bay Area.	**Low.** Suitable habitat may be present in mature trees on Point San Pablo or abandoned buildings at the Terminal 4 site; however, this species is uncommon in the Bay Area and foraging habitat is absent from the project vicinity. No documented occurrences within 3 miles of the project area.
Western red bat *Lasiurus blossevillii*	--/*/WBWG High	Habitats include forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Absent from desert areas. May prefer habitat edges and mosaics. Solitary rooster in tree foliage. May hibernate in leaf litter.	**Low.** Suitable habitat may be present in mature trees on Point San Pablo, however, open areas for foraging are limited. No documented occurrences within 3 miles of the project area.
Hoary bat *Lasiurus cinereus*	--/*/ WBWG Medium	Habitats include woodlands, forests, and riparian habitats with dense foliage. Often found near open grassy areas in coniferous or deciduous forests or near lakes. Solitary rooster in tree foliage.	**Moderate.** Suitable roosting habitat may be present in mature trees on Point San Pablo; however, overall roosting and foraging habitat is marginal. No documented occurrences within 3 miles of the project area.
San Pablo vole *Microtus californicus sanpabloensis*	--/SSC/--	Grassy habitats associated with salt marshes.	**Not expected.** Salt marsh habitat not present in the vicinity of the project area. No occurrences in the vicinity of the project area.
Big free-tailed bat *Nyctinomops macrotis*	--/SSC/WBWG Medium-High	Prefer habitats with rugged, rocky terrain up to 8,000 feet elevation. Clustering information unknown. Roost in rock crevices.	**Not expected.** Typical distribution is limited to southeastern California. No occurrences in the vicinity of the project area.
Angel Island mole *Scapanus latimanus insularis*	--/*/--	Scientific information is absent for this species. Presumed endemic to Angel Island and inhabiting similar habitats as other sub-species of *Scapanus latimanus*, including annual and perennial grasslands and other habitats with moist, friable soils.	**Not expected.** Outside of species' distribution. No occurrences in the vicinity of the project area.
Alameda Island mole *Scapanus latimanus parvus*	--/--/SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	**Not expected.** Outside of species' known distribution. No occurrences in the vicinity of the project area.
Suisun shrew *Sorex ornatus sinuosus*	--/SSC/--	Upper edges of tidal marshes within northern shores of San Pablo and Suisun Bays.	**Not expected.** Tidal marshes not present in the vicinity of the project area. No occurrences in the vicinity of the project area.
Salt marsh wandering shrew *Sorex vagrans halicoetes*	--/SSC/--	Salt marsh habitat 6-8 feet above sea level, with abundant pickleweed and driftwood.	**Not expected.** Salt marsh habitat not present in the vicinity of the project area. Nearest documented occurrence is in Wildcat Marsh, approximately 2 miles from the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Mammals (cont.)			
American badger *Taxidea taxus*	--/SSC/--	Grasslands, savannas, deserts, timberline mountain meadows.	**Not expected.** Suitably large and open habitat not present in the vicinity of the project area. No occurrences in the vicinity of the project area.
Point Reyes jumping mouse *Zapus trinotatus orarius*	--/SSC/--	Inhabit dense plant cover, such as streamsides, thickets, moist fields and some woodlands. Range is restricted to west side of Marin County.	**Not expected.** Outside of species' known distribution. No occurrences in the vicinity of the project area.
Plants			
Napa false indigo *Amorpha californica var. napensis*	--/--/1B.2	Openings in broadleafed upland forest, in chaparral and cismontaine woodland. Found north of San Francisco Bay, as well is in Monterey County. April – July	**Not expected.** Suitable habitat not present in the vicinity of the project area and outside of specie's possible range.
Bent-flowered fiddleneck *Amsinckia lunaris*	--/--/1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. March – June	**Low.** Suitable habitat within inland portion of project area and within the species' possible range. However, no documented occurrences within 3 miles of the project area.
Mt. Tamalpais manzanita *Arctostaphylos montana* ssp. *montana*	--/--1B.3	Serpentinite (Affinity: broad endemic), rocky soils within chaparral, and valley and foothill grassland habitats. Known from Marin County. February – April	**Not expected.** Outside of species' known distribution.
Marin manzanita *Arctostaphylos virgata*	--/--/1B.2	Chaparral, mixed evergreen forest, redwood forest, closed-cone pine forest. Known from approximately 20 occurrences in west Marin County. January – March	**Not expected.** Outside of species' known distribution.
Alkali milk-vetch *Astragalus tener* var. *tener*	--/--/1B.2	Grows in playas, valley and foothill grasslands in adobe clay, and vernal pools in alkaline soils. March – June	**Not expected**. Suitable habitat not present in the vicinity of the project area. No documented occurrences within 3 miles of the project area.
Thurber's reed grass *Calamagrostis crassiglumis*	--/--/2B.1	Coastal scrub (mesic), marshes and swamps. Range is north of San Francisco May – July	**Low.** Outside of species' presumed range. Coastal scrub habitat is limited in in the vicinity of the project area; marshes and swamps are absent.
Coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, North Coast coniferous forest. May– September	**Low.** Project area is within the species' confirmed range, however, no CNDDB, CNPS or Calflora observations in vicinity of project area, with the exception of Red Rock Island, 2.25 miles out in the San Francisco Bay.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Bristly sedge *Carex comosa*	--/--/2B.1	Coastal prairie, marshes and swamps (lake margins), valley and foothill grasslands. 270 – 1030 m. May – September	**Not expected**. Suitable habitat not present in vicinity of project area.
Northern meadow sedge *Carex praticola*	--/--/2B.2	Meadows and seeps. May – July	**Not expected**. Suitable habitat not present in vicinity of project area.
Point Reyes salty bird's beak *Chloropyron maritimum* ssp. *palustre*	--/--/1B.2	Coastal salt marshes and swamps. June – October	**Not expected**. Suitable habitat not present in vicinity of project area. Only one documented occurrence in CNDDB, which is from the mid-1800s in a non-specific saltmarsh location in San Rafael.
San Francisco Bay spineflower *Chorizanthe cuspidata* var. *cuspidata*	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. April – July	**Low.** Very limited coastal scrub in vicinity of project area and no CNDDB, CNPS or Calflora observations in the vicinity of project area.
Franciscan thistle *Cirsium andrewsii*	--/--/1B.2	Broadleaved upland forest, coastal bluff scrub, coastal prairie, and coastal scrub. Mesic habitats, sometimes serpentinite soils (Affinity: weak indicator). March – July	**Low.** Limited suitable habitat present (coastal scrub). No records in vicinity of project area in Calflora or CNPS; CNDDB observations are all from San Francisco and Marin Counties.
Mt. Tampalpais thistle *Cirsium hydrophilum* var.*vaseyi*	--/--/1B.2	Broadleafed upland forest, chaparral, meadows and seeps. Strict serpentine endemic. Known from fewer than 20 occurrences on Mount Tamalpais. May – August	**Not expected.** Outside of species' known distribution and serpentine soils not present in the vicinity of project area.
Round-headed Chinese houses *Collinsia corymbosa*	--/--/1B.2	Coastal dunes. April – June	**Not expected**. Suitable habitat not present in the vicinity of project area.
San Francisco collinsia *Collinsia multicolor*	--/--/1B.2	Closed-cone coniferous forests, coastal scrub, sometimes on serpentinite derived soils (Affinity: weak indicatior / indifferent). March – May	**Not expected.** No records from East Bay and limited coastal scrub habitat in the vicinity of project area.
Western leatherwood *Dirca occidentalis*	--/--/1B.2	Mesic habitats. Broadleafed upland and closed-cone coniferous forest, chaparral, cismontane woodland, North coast coniferous forest, riparian forest and woodland. January – March	**Not expected.** Generally associated with inland oak/bay laurel woodland in East Bay, and this habitat is not present in the vicinity of project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Tiburon buckwheat *Eriogonum luteolum* var. *caninum*	--/--/1B.2	Chaparral, coastal prairie, valley and foothill grasslands, sandy to gravelly sites, usually on sandy to gravelly soils, strict serpentine endemic. May – September	**Not expected.** Serpentine soils not present in the vicinity of project area.
San Joaquin spearscale *Etriplex joaquinana*	--/--/1B.2	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland April – October	**Not expected.** Suitable habitat not present in the vicinity of project area.
Minute pocket moss *Fissidens pauperculus*	--/--/1B.2	Coastal coniferous forest with damp coastal soils.	**Not expected.** Suitable habitat not present in the vicinity of project area.
Marin checker lily *Fritillaria lanceolata* var. *tristulis*	--/--/1B.1	Coastal bluff scrub, coastal prairie, coastal scrub. February – May	**Low.** Limited suitable habitat present (coastal scrub). No records in vicinity of project area in Calflora, CNPS or CNDDB.
Fragrant fritillary *Fritillaria liliacea*	--/--/1B.2	Coastal prairie, valley grassland, northern coastal scrub, wetland-riparian; weak affinity for serpentine. February – April	**Low.** No recent observations in project vicinity. Historic observations from Point Richmond, but presumed extirpated from Point Richmond. Limited suitable habitat in the vicinity of project area.
Blue coast gilia *Gilia capitata* ssp. *chamissonis*	--/--/1B.1	Coastal dunes, coastal scrub. April – July	**Not expected.** Suitable habitat not present in the vicinity of project area.
Woolly-headed gilia *Gilia capitata* ssp*. tomentosa*	--/--/1B.1	Serpentinite, rocky, outcrops. Coastal bluff scrub, valley and foothill grassland. May – July	**Low.** Limited suitable habitat present in the vicinity of project area and no observations in the vicinity.
Dark-eyed gilia *Gilia millefoliata*	--/--/1B.2	Coastal dunes. April – July	**Not expected.** Suitable habitat not present in the vicinity of project area.
Diablo helianthella *Helianthella castanea*	--/--/1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Usually rock, axonal soils; often in partial shade. March – June	**Low.** Limited suitable habitat in vicinity of project area and no observations in the vicinity of the project area. East Bay observations are all in foothills.
Congested-headed hayfield tarplant *Hemizonia congesta* ssp. *congesta*	--/--/1B.2	Valley and foothill grassland; sometimes roadsides. Affinity for serpentine soil: weak indicator / indifferent. April – November	**Low.** Limited suitable habitat present and no observations in the vicinity of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Water star-grass *Heteranthera dubia*	--/--/2B.2	Requires a pH of 7 or higher, usually in slightly eutrophic waters. Marshes and swamps (alkaline, still or slow-moving water). July – August	**Not expected.** Suitable habitat not present in the vicinity of project area.
Loma Prieta hoita *Hoita stroblina*	--/--/1B.1	Mesic habitats. Usually serpentinite soils in chaparral and cismontane and riparian woodland. Affinity for serpentine soil: strong indicator. May – July	**Not expected.** Suitable habitat not present in the vicinity of project area. One observation in vicinity of project area, well inland. Serpentine soils not present in the vicinity of project area.
Kellogg's horkelia *Horkelia cuneata* var. *sericea*	--/--/1B.1	Openings in closed-cone coniferous forest, maritime chaparral, coastal scrub, sandy or gravelly soil. February - July	**Not expected.** Suitable habitat very limited and no Calflora, CNPS or CNDDB observation around San Pablo Bay.
Point Reyes horkelia *Horkelia marinensis*	--/--/1B.2	Coastal strand, coastal prairie, northern coastal scrub and dune habitats. May - September	**Not expected.** Suitable habitat not present in the vicinity of project area.
Thin-lobed horkelia *Horkelia tenuiloba*	--/--/1B.2	Mesic openings, sandy soils. Broadleafed upland forest, chaparral, valley and foothill grassland. May – July	**Not expected.** Suitable habitat not present in the vicinity of project area. No Calflora or CNPS observations around San Pablo Bay. One CNDDB observation on a Muir Beach overlook.
Carquinez goldenbush *Isocoma arguta*	--/--/1B.1	Valley and foothill grassland, usually in alkaline soils. August – December	**Not expected.** Limited suitable habitat. One observation from Carquinez Straits shoreline.
Small groundcone *Kopsiopsis hookeri*	--/--/2B.3	North coast coniferous forest. April – August	**Not expected.** Suitable habitat not present in the vicinity of project area.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	--/--/1B.2	Freshwater and brackish marshes and swamps. Mostly limited to Suisun Bay and Sacramento-San Joaquin River Delta. May – June	**Not expected.** Suitable habitat not present in the vicinity of project area.
Rose leptosiphon *Leptosiphon rosaceus*	--/--/1B.1	Coastal bluff scrub April – July	**Low.** Marginally suitable habitat in vicinity of project area and no recent occurrences recorded in CNDDB, Calflora or CNPS in the vicinity of the project area.
Tamalpais lessingia *Lessingia micradenia* var. *micrdenia*	--/--/1B.2	Usually serpentinite (Affinity: broad endemic), often roadsides. Chaparral, valley and foothill grassland. Known only from 4 occurrences in the Mount Tamalpais area. July – October	**Not expected.** Outside of species' known distribution. No occurrences recorded outside of the North Bay of San Francisco Bay.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Oregon meconella *Meconella oregana*	--/--/1B.1	Coastal prairie and coastal scrub. March – April	**Not expected.** Suitable habitat not present in the vicinity of project area. Known from only five locations in California, including from the Richmond, Briones Valley, and Oakland East quads at elevations of 820 ft and higher.
Marsh microseris *Microseris paludosa*	--/--/1B.2	Closed-cone coniferous forest, woodland, coastal scrub, and valley and foothill grassland. April – June	**Not expected.** Limited suitable habitat. Observations are limited to North Bay and near Suisun City.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	--/--/1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Mesic habitats. April – June	**Not expected.** Suitable habitat not present in the vicinity of project area. No occurrences recorded in CNDDB, Calflora or CNPS in the vicinity.
Marin County navarretia *Navarretia rosulata*	--/--/1B.2	Closed-cone coniferous forest, chaparral. Serpentinite, rocky soil. Strict serpentine endemic. May – July	**Not expected.** Suitable habitat not present in the vicinity of project area. Serpentine soils not present in vicinity of project area.
Choris' popcornflower *Plagiobothrys chorisianus* var. *chorisianus*	--/--/1B.2	Mesic habitats. Chaparral, coastal scrub, and coastal prairie. March – June	**Not expected.** Only one historic (late 1800s) documented occurrence in the East Bay, which is presumed extirpated.
Hairless popcornflower *Plagiobothrys glaber*	--/--/1A	Alkaline meadows and seeps. Coastal salt marshes and swamps. March – May	**Not expected.** Not documented to occur within 3 miles of project area. CNPS reports only one extant occurrence in the Dublin quad. All other records are historical, and notes the last confirmed sighting was in 1954. Calflora contains recent observations near Dublin.
Oregon polemonium *Polemonium carneum*	--/--/2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. April – September	**Low.** Limited suitable habitat in the vicinity of project area. No documented occurrences within 3 miles of project area.
Marin knotweed *Polygonum marinense*	--/--/3.1	Coastal salt and brackish marshes, and swamps. (April) May – August (October)	**Low.** One recent occurrence from a 2018 Natural Resource Database survey. However, there is only marginal suitable habitat within the project area.
Tamalpais oak *Quercus parvula* var. *tamalpaisensis*	--/--/1B.3	Lower montane coniferous forest. Known only from Mount Tamalpais. March – April	**Not expected.** Outside of species' known range.
Chaparral ragwort *Senecio aphanactis*	--/--/2B.2	Chaparral, cismontane woodland, coastal scrub, sometimes in alkaline soils. January – April	**Low.** Limited suitable habitat in the vicinity of project area. Nearest documented occurrence is an historical (late 1800s) observation in the Mare Island quad, over 10 miles from the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Point Reyes checkerbloom *Sidalcea calycosa* ssp. *rhizomata*	--/--/1B.2	Freshwater marshes and swamps near the coast. April – September	**Not expected.** Suitable habitat not present in the vicinity of project area.
Marin checkerbloom *Sidalcea hickmanii* ssp. *viridis*	--/--/1B.1	Chaparral. Strict serpentine endemic. May – June	**Not expected.** Serpentine soil not present in the vicinity of project area.
San Francisco campion *Silene verecunda* ssp. *verecunda*	--/--/1B.2	Coastal prairie, coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Coastal habitat. March – June	**Low.** Limited suitable habitat in the vicinity of project area. No documented occurrences in the East Bay; nearest occurrences are on the San Francisco Peninsula.
Long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla*	--/--/1B.2	Alkaline soils, meadows and seeps, marshes and swamps. February – May	**Low.** Suitable habitat very limited in the vicinity of project area. One recorded occurrence from 1989 in CNDDB around San Pablo Marsh and Wildcat Marsh, exact location unknown.
Santa Cruz microseris *Stebbinsoseris decipiens*	--/--/1B.2	Coastal prairie, chaparral, mixed evergreen forest, closed-cone pine forest and northern coastal scrub. Affinity to serpentine soil: weak indicator. Blooms April – May	**Low.** Limited suitable habitat in the vicinity of project area. No documented occurrences in the East Bay; nearest occurrences are on the San Francisco Peninsula and Bolinas USGS quadrangle.
Most beautiful jewelflower *Streptanthus albidus* ssp. *peramoenus*	--/--/1B.2	Serpentine soils in chaparral, cismontane woodland, and valley and foothill grassland. April - September	**Not expected.** Serpentine soils not present in the vicinity of project area.
Tamalpais jewelflower *Streptanthus batrachopus*	--/--/1B.3	Closed-cone coniferous forest, chaparral. Known from fewer than ten occurrences in the Mount Tamalpais area. Strict serpentine endemic. April – June	**Not expected.** Serpentine soil not present in the vicinity of project area.
Mt. Tamalpais bristly jewelflower *Streptanthus glandulosus* ssp. *pulchellus*	--/--/2B.2	Chaparral, valley and foothill grassland. Known only from the Mount Tamalpais area. Affinity for serpentine soil: broad endemic. May – July	**Not expected.** Outside of species' known range. Serpentine soil not present in the vicinity of project area.
Suisun Marsh aster *Symphyotrichum lentum*	--/--/1B.2	Brackish and freshwater marshes and swamps. (April) May - November	**Moderate.** Suitable habitat is present in the vicinity of the project area. This species is known to occur in the upper elevations of rip rap. The nearest recent occurrence was recorded in 1988 approximately 1.2 miles away on Point San Pablo.
Saline clover *Trifolium hydrophilum*	--/--/1B.2	Marshes and swamps, vernal pools, and alkaline, mesic habitats in valley and foothill grassland. April – June	**Low.** Potential for suitable habitat in the vicinity of the project area is limited. Documented occurrences in the vicinity are historic, non-specific occurrences that are likely extirpated, according to the CNDDB. One historic occurrence from the border of a salt marsh in Point Richmond is presumed extant. Salt marsh is not present in the vicinity of the project area.

TABLE BIO-1 (CONTINUED)
SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR IN THE VICINITY OF THE PROJECT AREA

Common Name *Scientific Name*	Listing Status USFWS/ CDFW/CRPR	General Habitat Requirements and Period of Identification	Potential for Species Occurrence[a]
Plants (cont.)			
Coastal triquetrella *Triquetrella californica*	--/ --/1B.2	Coastal bluff scrub and coastal scrub. This moss grows on soil. Year-round.	**Low.** Limited suitable habitat in vicinity of project area. Known in California from fewer than 10 small coastal occurrences. CNPS documents an extant occurrence in the San Quentin quad.
Oval-leaved viburnum *Viburnum ellipticum*	--/--/2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. May - June	**Not expected.** Suitable habitat not present within the vicinity of the project area. Occurs at elevations of 215 m or higher. Nearest occurrence to project area is an historical (early 1900s), non-specific occurrence documented in CNDDB.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
- FE = Listed as Endangered (in danger of extinction) by the Federal Government
- FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government
- CE = Candidate to become an Endangered species
- CT = Candidate to become a Threatened species
- FDL = Federal Delisted
- MMPA = Marine Mammal Protection Act

STATE: (California Department of Fish and Wildlife)
- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- CE = Candidate to become an Endangered species
- CT = Candidate to become a Threatened species
- SR = Listed as Rare by the State of California
- FP = Fully Protected
- SSC = California Species of Special Concern
- MLMA = Marine Life Management Act

Xerces Society for Invertebrate Conservation (Xerces):
- CI = Critically imperiled
- IM = Imperiled
- VU = Vulnerable
- DD = Data Deficit

Western Bat Working Group (WBWG):
- Low = Stable population
- Medium = Need more information about the species, possible threats, and protective actions to implement
- High = Imperiled or at high risk of imperilment

California Rare Plant Ranks (CRPR):
- List 1A = Plants presumed extinct in California
- List 1B = Plants rare, threatened, or endangered in California and elsewhere
- List 2A = Plants presumed extirpated in California, but more common elsewhere
- List 2B = Plants rare, threatened, or endangered in California, but more common elsewhere

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
- .1 – Seriously threatened in California
- .2 – Fairly threatened in California
- .3 – Not very threatened in California

[a] Determinations regarding potential for species occurrence within the service area boundary are based on a review of the CNDDB (CDFW, 2018); CNPS's Online Inventory of Rare and Endangered Plants (CNPS, 2018); Calflora's online database of California plants (Calflora, 2018); and an iPAC species list from the U.S. Fish and Wildlife Service (USFWS, 2018). Consideration was given to the observation date (historical or recent), current land conditions (e.g., developed, protected), distance from the service area boundary to documented species occurrences, habitat connectivity, the presence or lack of suitable habitat within the service area boundary, and the number of documented occurrences within the service area boundary or surrounding quadrangles.

SOURCE: CDFW, 2019; CNPS, 2019; Calflora, 2019; ESA, 2019; USFWS, 2019.

SOURCE: CDFW, 2019; ESA, 2019

Terminal Four Wharf, Warehouse and Piling Removal Project

Figure BIO-1
Special-Status Wildlife Species Within Three Miles of the Project Area

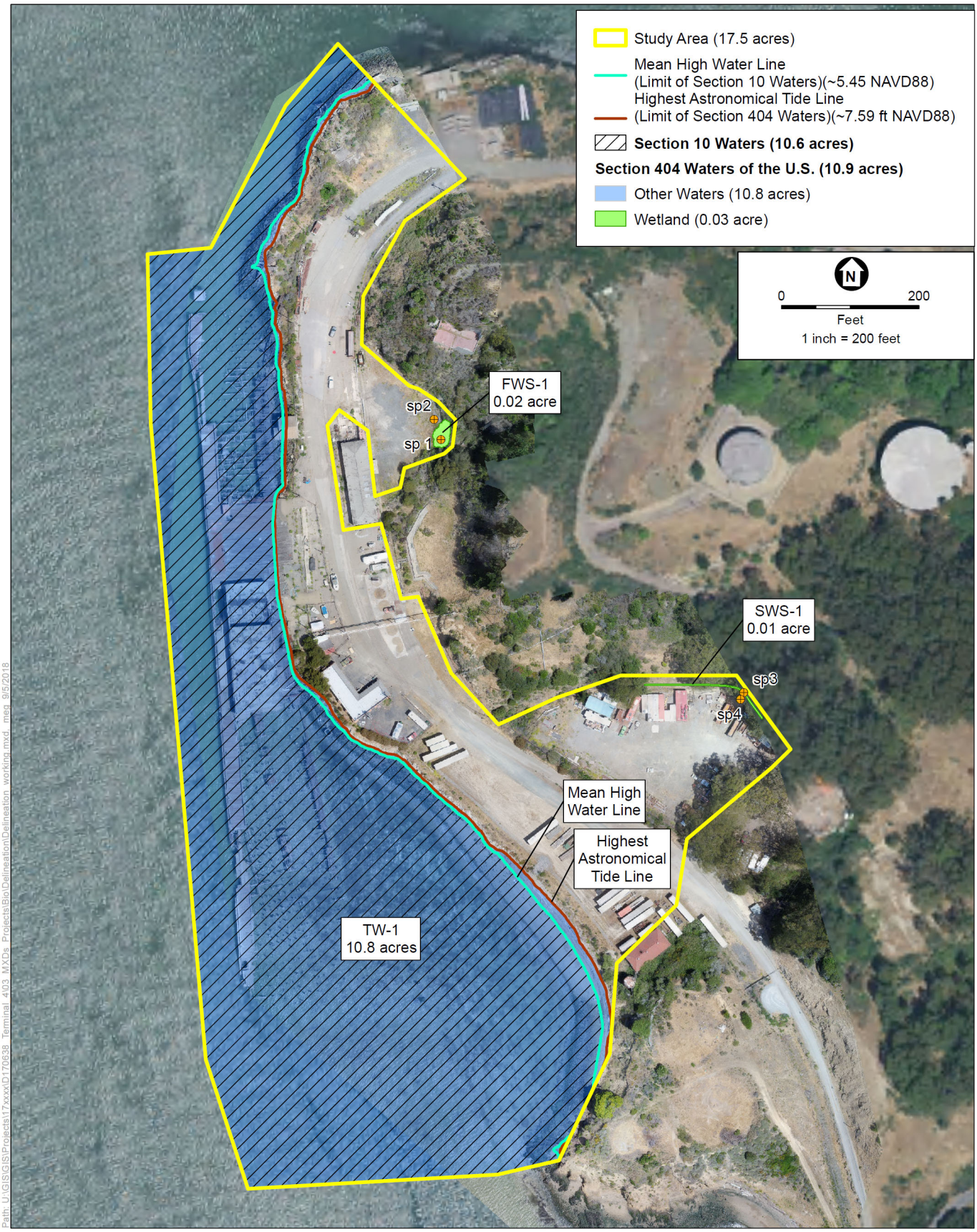
ESA

SOURCE: CDFW, 2019; ESA, 2019

Terminal Four Wharf, Warehouse and Piling Removal Project

Figure BIO-2
Special-Status Plant Species Within Three Miles of the Project Area

ESA



Path: U:\GIS\GIS\Projects\17xxxx\D170638_Terminal_4\03_MXDs_Projects\Bio\Delineation\Delineation_working.mxd, meg, 9/5/2018

SOURCE: ESA, 2018

Map prepared by W. McCullough (ESA) on 8/27/18
Surveyors: M. Giolli and E. Walther (ESA)
Imagery within study area collected by drone on June 5, 2018.

Terminal 4 Demolition Project

Figure BIO-3
Preliminary Aquatic Resources Delineation

ESA