Draft

Environmental Assessment
Cargill, Incorporated Solar Sea Salt System
Maintenance and Operations Activities

SCH #2020080442
April 2021

Prepared for:
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and

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) analyzes the environmental impacts of the proposed continued maintenance and operation activities of Cargill, Incorporated's (Cargill's) Solar Salt System in Newark and Redwood City, California (proposed Project). Cargill's continuation of its current production of salt using a systematic process of evaporation along the shoreline of the San Francisco Bay and within historic salt flat areas requires, among other authorizations, a permit from the San Francisco Bay Conservation and Development Commission (BCDC). Current maintenance and operation activities are undertaken pursuant to a BCDC permit that was issued in 1995 and has been periodically extended to the present day. Cargill now seeks to renew the BCDC permit, and other authorizations as needed, for another 10-year period.

With respect to Cargill's proposed Project, BCDC serves as the lead agency for purposes of the California Environmental Quality Act (CEQA). However, BCDC is exempt from typical CEQA requirements of a lead agency to prepare an environmental impact report, negative declaration, or mitigated negative declaration for Cargill's proposed Project because it instead implements a regulatory program that has been certified by the Secretary of Natural Resources as meeting the requirements of Section 21080.5 of CEQA (Title 14 of the California Code of Regulations section 15251(h) [14 CCR § 15251(h)]). Therefore, BCDC has prepared this EA in compliance with its regulations implementing its certified regulatory program (Certified Program) as codified at 14 CCR § 11511 to 11521. However, BCDC has prepared this EA in a manner so that other agencies with permitting/regulatory authority over Cargill's proposed Project may rely on the EA in order to satisfy their obligations under CEQA as responsible agencies (14 CCR § 15253(b)).

BCDC's regulations, contained in 14 CCR § 11511 and § 11521, require that if the BCDC is the lead agency and the Executive Director has determined that a proposed activity is not statutorily exempt and is not categorically exempt, he or she shall next determine whether the proposed activity may have any individually or cumulatively substantial adverse impact on the physical environment. If the Executive Director determines that the proposed activity may have a significant adverse impact on the physical environment either individually or cumulatively, BCDC must prepare an EA that complies with § 11521, containing a summary of the following:

- a brief description of the proposed activity;
- all substantial, adverse environmental impacts that the proposed activity may cause;
- all irreversible environmental impacts that the proposed activity may cause;
- any feasible mitigation measures that would reduce such substantial adverse environmental impacts;
- any feasible alternatives, including design alternatives, to the proposed Project that would reduce such substantial adverse environmental impacts; and
- such other information that the Executive Director believes appropriate.

BCDC must then include the EA in the application summary, the staff planning report, or combined staff planning report and recommendation.

Project Purpose and Objectives

The Project purpose is to continue maintenance of and operational activities at Cargill's solar salt systems in Newark and Redwood City in a safe and environmentally protective manner over the next 10 years. The Project objectives include (1) continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure associated with salt-making to ensure continued viability of salt production activities; (2) allow for implementation of preliminary sea level rise adaptation efforts, including studies; and (3) permit Cargill to develop and implement alternative maintenance methods, as discussed herein, that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

Organization of the Document

This EA is divided into six sections supported by seven appendices, as follows:

- Section 1 provides the Project background, agency and Cargill, Incorporated (Applicant) information, Project objectives and anticipated agency approvals, and a summary of the public review and comment process.
- Section 2 describes the proposed Project including its location, equipment, facilities, level of activity, and an overview of the Project's operations and schedule.
- Section 3 provides the evaluation of environmental effects including the environmental setting, identification and analysis of potential impacts, and discussion of measures that, if incorporated into the Project, would mitigate or avoid those impacts in accordance with 14 CCR § 11521 and 15253.
- Section 4 presents information on report preparation and the preparers of this document.
- Section 5 presents the reference list of documents cited in this EA.
- Section 6 includes a glossary of key terms used in this document.

The appendices include specifications, technical data, and other information supporting the analysis presented in this EA.

- Appendix A: USACE Approval Letter for Mitigation in Perpetuity
- Appendix B: Example Completion Report
- Appendix C: Cargill Specifications for Acceptable Riprap and Clean Material
- Appendix D: Summary of Applicable Federal and State Regulations
- Appendix E: Special-Status Species Tables
- Appendix F: Noise Calculations
- Appendix G: Project Mailing List

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Description
2017 Plan	*2017 Clean Air Plan: Spare the Air, Cool the Climate* (BAAQMD 2017a)
ACFC	Alameda County Flood Control and Water Conservation District
ACS	American Community Survey
ACTC	Alameda County Transportation Commission
BAAQMD	Bay Area Air Quality Management District
Basin Plan	*Water Quality Control Plan for the San Francisco Bay Basin* (RWQCB 2017)
Bay Plan	*San Francisco Bay Plan* (BCDC 2020)
BCDC	San Francisco Bay Conservation and Development Commission
BMP	Best Management Practice
BO	Biological Opinion
Cal-IPC	California Invasive Plant Council
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
C/CAG	City/County Association of Governments
CCP	Comprehensive Conservation Plan
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CHRIS	California Historical Resource Information System
CLT	California least tern
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide

Acronym	Description
CO_2e	carbon dioxide equivalents
CRHR	California Register of Historic Resources
CRR	California Ridgway's rail
CWA	Clean Water Act
CWCB	California Wildlife Conservation Board
CY	cubic yards
dBA	A-weighted decibels
DPM	diesel particulate matter
DPS	distinct population segment
EA	Environmental Assessment
EBDA	East Bay Dischargers Association
EIR	Environmental Impact Report
EJ	environmental justice
EO	Executive Order
ES and SNR	Endangered Species and Sensitive Natural Resources
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
GHG	greenhouse gas
HAPC	Habitat Area of Particular Concern
HI	hazard index
HUD	U.S. Department of Housing and Urban Development
ICLEI	Local Governments for Sustainability
L_{dn}	day-night sound level
L_{eq}	equivalent continuous sound level
Leslie	Leslie Salt Company
LOS	Level of Service
MESR	Maximally Exposed Sensitive Receptor
mg/L	milligrams per liter

Acronym	Description
MHHW	mean higher high water
MLLW	mean lower low water
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MSS	mixed sea salts
MTC	Metropolitan Transportation Commission
MT CO_2e	metric tons of carbon dioxide equivalents
N_2O	nitrous oxide
NaCl	sodium chloride (table salt)
NAHC	Native American Heritage Commission
ND	negative declaration
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NRHP	National Register of Historic Places
OEHHA	California Environmental Protection Agency Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppt	parts per thousand
PPV	peak particle velocity
PRC	Public Resources Code
Refuge	Don Edwards San Francisco Bay National Wildlife Refuge
ROG	reactive organic gas
ROW	right-of-way
RWQCB	San Francisco Bay Regional Water Quality Control Board
SCVWD	Santa Clara Valley Water District
SFBBO	San Francisco Bay Bird Observatory
SLR	sea level rise

Acronym	Description
SMCFCD	San Mateo County Flood Control District
SMHM	salt marsh harvest mouse
SO_2	sulfur dioxide
SSC	suspended sediment concentration
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TDI	toluene diisocyanate
TMP	Traffic Management Plan
UCERF3	third Uniform California Earthquake Rupture Forecast
UPRR	Union Pacific Railroad
US-101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VMT	vehicle miles traveled
WGCEP	Working Group on California Earthquake Probabilities
WSP	western snowy plover

1.0 PROJECT SUMMARY

Project Title: Cargill, Incorporated Solar Salt System Maintenance and Operation Activities Project

Lead Agency Name and Address:

San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

Contact Person and Phone Number:

Name/Title: Schuyler Olsson, Coastal Program Analyst
Phone: (415) 352-3668
Email: Schuyler.olsson@bcdc.ca.gov

Project Location

San Mateo and Alameda Counties, California

The Cargill, Incorporated (Cargill) Solar Salt System Maintenance and Operation Activities Project (Project) would be located primarily in Alameda County on the east shore of the San Francisco Bay, with a smaller area on the west shore in San Mateo County (Figure 1-1). Salt production is conducted in three primary areas: Newark Plants 1 and 2, and the Redwood City Plant (Section 2 for information regarding these facilities). In addition to these three primary plant areas, Cargill also operates Baumberg Pond B-3C north of Alameda Creek, as well as the Cargill West Bay areas as part of the salt-making operations. The Cargill West Bay areas include the Redwood City Maintenance Pond at U.S. Fish and Wildlife Service (USFWS) Pond SF-2 (formerly known as the SF-2 Donut) and the West Bay lands overlying the brine pipeline connecting the Redwood City Plant to the Newark plants. The brine pipeline as described in this document also includes the Transbay Pipeline section of the pipeline. The three plant sites, Pond B-3C, and the Cargill West Bay areas together comprise the "Project area." A portion of the Project area is within the USFWS Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). Activities would occur throughout Project area. Table 1-1 presents the latitude and longitude coordinates of these various components of the Project area.

Table 1-1. Location Coordinates of the Project Area Components

Project Area Component	Latitude	Longitude
Baumberg Pond B-3C	37°34'09"N	122°05'35"W
Newark Plant 1	37°29'50"N	122°11'50"W
Newark Plant 2	37°32'50"N	122°06'00"W
Redwood City Plant	37°29'50"N	122°01'50"W
Cargill West Bay Areas (Redwood City Maintenance Pond Location)	37°29'52"N	122°07'45"W

Note: Coordinates represent approximately the center of each plant or pond.

The Project area includes 41 parcels, as summarized in Table 1-2. The Project area includes both parcels that are owned by Cargill and parcels owned by USFWS on which Cargill has the perpetual right to operate.

Table 1-2. Parcel Numbers and Associated Ponds/Areas for the Project Area Components

Project Area Component	Assessor's Parcel Number (APN)	Applicable Pond(s)/Areas
Baumberg Pond B-3C	482-80-2-26	B-3C
Newark Plant 1	537-551-5-1	1, PP1
	537-551-6-6	PP1
	537-601-3-3	1
	537-601-3-8	2, 3
	537-601-15-9	4, 6, 9, 4B, 8
	537-601-16-2	4
	543-370-1-8	4, 5, 6, 7, 8, 1A, 2A, 3A, 4A
Newark Plant 2	537-751-10	Cx20, Cx21
	537-751-11	Cx22, Cx23
	537-751-1-1	PP8, Cx18, Cx19, Cx25, Cx1, Cx2, Cx3, Cx4, Cx5, Cx6, Cx7, Cx8, Cx9, Cx11, Cx12, Cx13, Cx15, Cx16, Cx27, Cx28, Cx10a, Cx26, DSP11, DSP10
	537-551-33-2	Cx13, Cx16, DSP10
	537-701-2-10	Cx26, PP8, DSP10, DSP11
	537-801-1-9	PP8, PP7
	537-751-14	Cx27
	537-751-15-2	Cx27, Cx28
	537-751-13	Cx27
	537-751-12-3	Cx24, Cx25, Cx27
	537-701-2-14	1, 2, 3
	537-701-1-1	1
	537-801-1-6	3, 6
	537-801-4-5	3, 4, 5, 6
	537-852-12	FMC Ponds
	537-852-14	FMC Ponds
	537-852-15	FMC Ponds
	537-852-16	FMC Ponds
	537-852-17	FMC Ponds
	537-852-18	FMC Ponds
Redwood City Plant	054-131-080	Flood Slough
	055-400-590	Belle Haven Pump Area

Project Area Component	Assessor's Parcel Number (APN)	Applicable Pond(s)/Areas
	054-300-230	Cx1-4
	054-300-670	Pond 10
	054-310-060	7C
	054-310-100	9A
	054-310-120	9
	054-310-140	9A
	054-310-160	Cx 1-9, 7A, 7B, 7C, 8W, 8E, 9, 9A, 10
	055-400-230	9
	054-400-510	Flood Slough
	054-400-520	Flood Slough
Cargill West Bay Areas	055-400-630	Redwood City Maintenance Pond (former SF-2 Donut), Brine Pipeline

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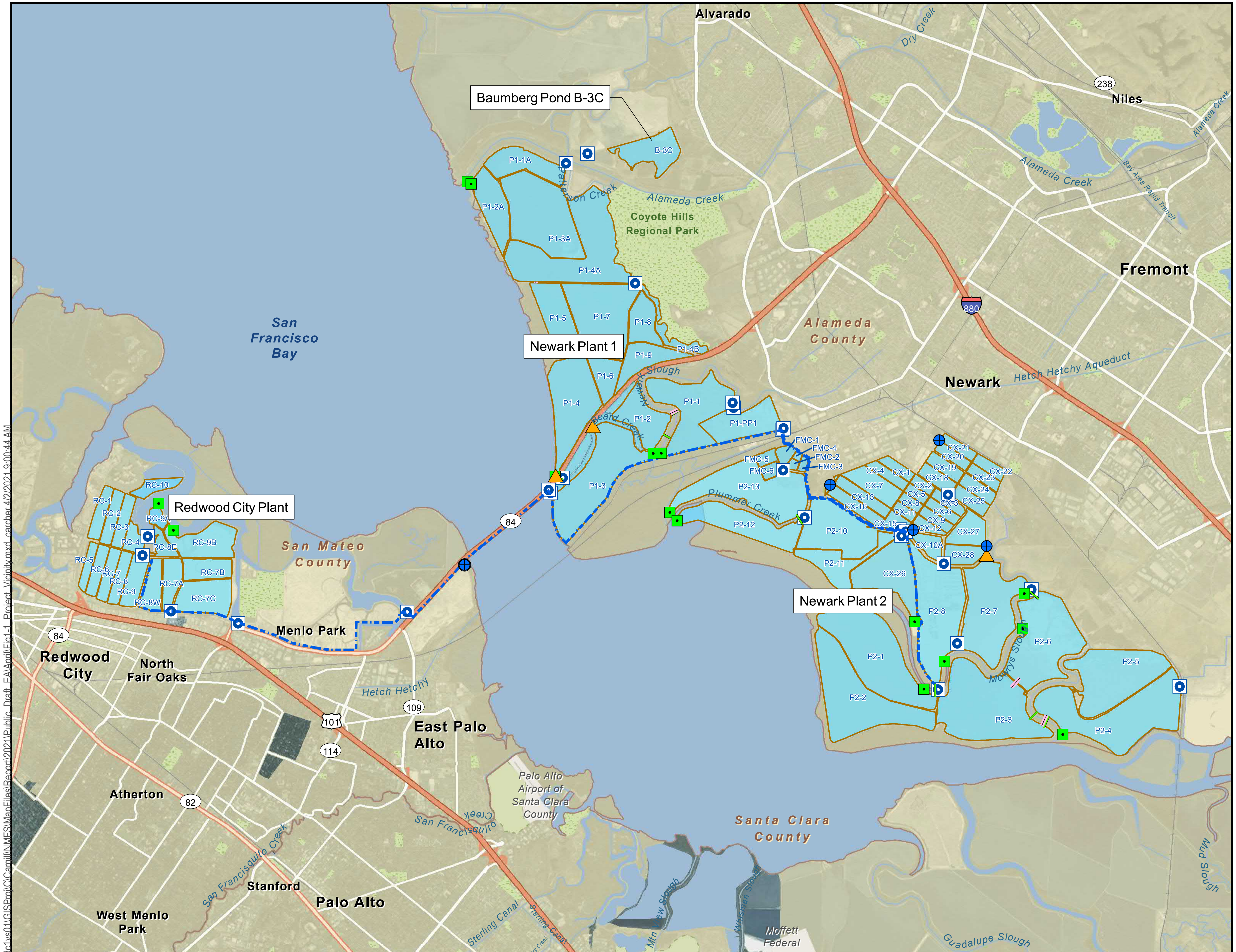

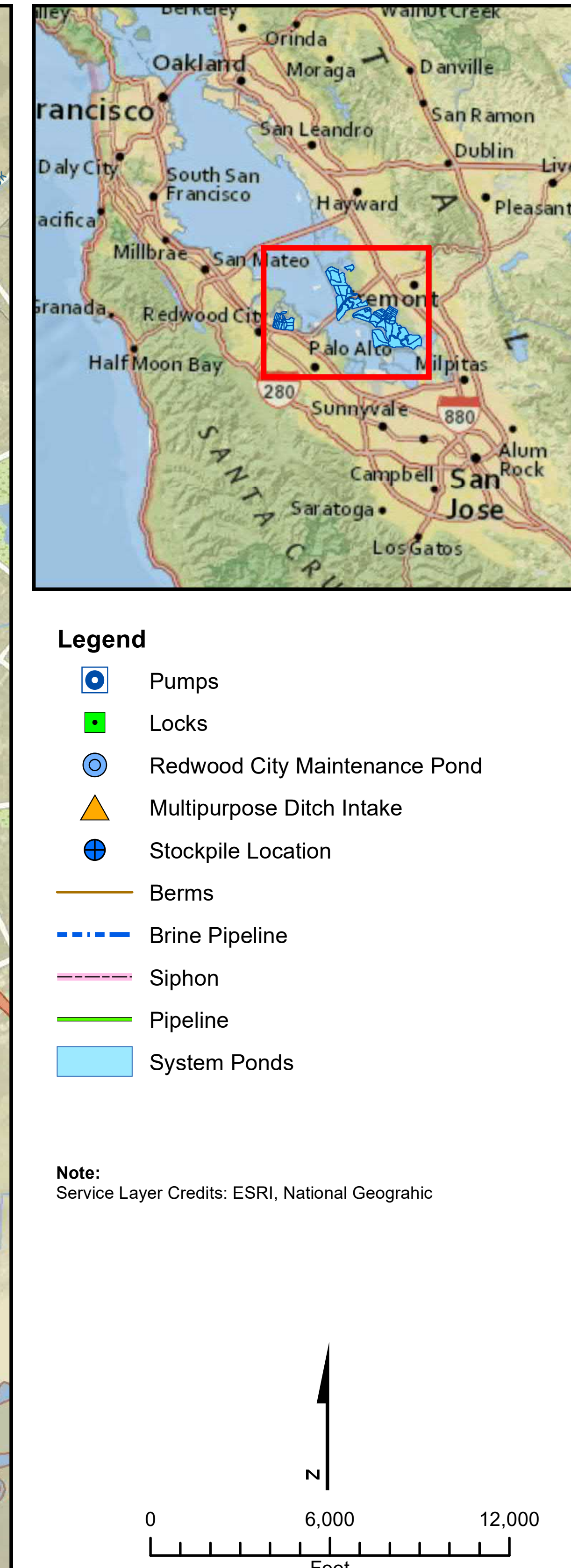

Figure 1-1
Cargill Solar Salt System Vicinity and Project Site
Cargill, Incorporated
Alameda and San Mateo County, CA

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Project Sponsor's Name and Address:

Cargill, Incorporated
7220 Central Avenue
Newark, CA 94560

General Plan Designation

The Project is composed of three main areas (Newark Plant 1, Newark Plant 2, and the Redwood City Plant), along with Pond B-3C and the Cargill West Bay areas. Applicable General Plan designations for each of these areas are shown in Table 1-3.

Table 1-3. General Plan Designations for the Project Area Components

Project Area Component	General Plan Designation of Project Area	General Plan Designation(s) of Adjacent Areas
Baumberg Pond B-3C	City of Hayward: Flood Plain	All: City of Hayward: Flood Plain
Newark Plant 1	City of Fremont: OS (Open Space); City of Newark: Resource Production - Salt Harvesting and Refining (allows man-made crystallizer beds used for salt crystallization, and related buildings, facilities, and operations for salt harvesting, stacking, sizing, packaging, and/or distribution)	East: City of Fremont: OS (Open Space), P (Planned District) South: None West: None North: City of Hayward: Flood Plain
Newark Plant 2	City of Fremont: OS (Open Space); City of Newark: Resource Production - Salt Harvesting and Refining (allows man-made crystallizer beds used for salt crystallization, and related buildings, facilities, and operations for salt harvesting, stacking, sizing, packaging, and/or distribution)	East: City of Fremont: OS (Open Space), RR (Railroad Corridor); City of Newark: High Density Residential, Low-Medium Density Residential, Conservation - Parks and Recreational Facilities, General Industrial, Open Space, Low-Density Residential South: City of Fremont: OS (Open Space) West: None North: None
Redwood City Plant	City of Redwood City: Western portion: UR (Urban Reserve) Eastern portion: OS (Open Space - Preservation)	East: City of Redwood City: OS (Open Space - Preservation); City of Menlo Park areas: Parks and Recreation, Baylands South: City of Redwood City: MDR (Residential - Medium Density), LI (Industrial - Light); City of Menlo Park areas: Light Industrial, Office, Residential West: City of Redwood City: IP (Industrial - Port-Related), O (Commercial Office - Professional/Technology), M (Marina) North: City of Redwood City: O (Commercial Office -Professional/Technology), M (Marina), OS (Open Space - Preservation)

Project Area Component	General Plan Designation of Project Area	General Plan Designation(s) of Adjacent Areas
Cargill West Bay Areas	City of Menlo Park: Baylands	East: City of Menlo Park: Baylands South: City of Menlo Park: Light Industrial, Office West: City of Menlo Park: Baylands North: City of Menlo Park: Baylands
Transbay Pipeline Component of Cargill West Bay Areas	City of Menlo Park: Baylands	East: City of Menlo Park: Baylands South: City of Menlo Park: Baylands West: City of Menlo Park: Baylands North: City of Menlo Park: Baylands

Sources:
City of Fremont 2011; City of Hayward 2014; City of Menlo Park 2016; City of Newark 2013, 2019; City of Redwood City 2010c.

Zoning

The City of Fremont's zoning map designates Newark Plants 1 and 2 as RCP (Resource Conservation/Public). The Land Use Element of the general plan (City of Fremont 2011) recognizes "salt ponds" as an appropriate use in Agriculture areas within the Resource Conservation and Public Open Space designation that encompasses the property. Fremont Municipal Code 18.120.030(a) further recognizes that "[e]xtraction of chemicals from sea water by natural evaporation" is a permitted use in an "A" District (Agriculture district).

The portion of Newark Plants 1 and 2 located in the City of Newark has the zoning designation of OC-A (Conservation-Open Space/Salt Harvesting, Refining, and Production). Section 17.28.030 of the municipal code permits the following uses in the "A" District, "provided that the structure, if any, which the use shall occupy, use, retain or place upon the use's site is of new construction at the time of initial occupancy:

A. Raising of field crops, fruit and nut trees, vegetables, horticultural specialties, poultry and livestock, but not including the raising in excess of five swine or goats;

B. Salt production ponds;

C. One-family dwellings with a minimum site area of one acre;

D. Home occupations, subject to the same conditions as specified for home occupations in the R districts; and

E. Accessory structures and uses located on the same site with a permitted use, including private garages and carports; one guest house or accessory living quarters without a kitchen for each dwelling on the site; barns, stables, coops, tank houses, storage tanks, windmills, silos and other farm outbuildings; storehouses, garden structures, greenhouses, recreation rooms and hobby shops; storage of petroleum products for the use of persons residing on the site."

Pond B-3C is in the City of Hayward, and is zoned Flood Plain. The Redwood City Plant is zoned TP (Tidal Plain), and the Cargill West Bay areas are located in Menlo Park and are zoned Flood Plain. Redwood City zoning regulations indicate that the purpose of the Tidal Plain district is "To create a district for the marsh lands adjacent to San Francisco Bay and to permit certain types of development therein of a relatively temporary nature which can ultimately be replaced by permanent development under another more appropriate zoning district." Uses that are allowed in the TP District include:

- Agriculture
- Extraction of chemicals from sea water by natural evaporation and extraction of oyster shells or other deposits from San Francisco Bay
- Public parks and public recreation areas or facilities

Similarly, the Menlo Park Flood Plain zoning allows the following uses:

- Agricultural uses
- Accessory buildings
- Accessory structures
- Extraction of chemicals from sea water
- Dredging

Surrounding Land Uses and Setting

On the upland side, all three salt production plants are generally bordered by developed areas, including residential and light and general industrial areas. The majority of Newark Plant 1 and much of Newark Plant 2 are located on Refuge lands. Newark Plant 1 is bordered by the California Department of Fish and Wildlife (CDFW) Eden Landing Ecological Reserve to the north, and partially bordered by Coyote Hills Regional Park to the east. Several sloughs bisect Newark Plants 1 and 2, and State Route (SR) 84 crosses Newark Plant 1. Baumberg Pond B-3C is bordered by the CDFW Eden Landing Ecological Reserve to the north and west, and City of Union City open space lands to the east and south.

The Redwood City Plant is bordered by the Refuge to the north and northeast, the City of Menlo Park's Bedwell Bayfront Park to the east, and the Port of Redwood City and an office park to the northwest and west. The western portion of the West Bay pipeline alignment is located immediately to the south of the USFWS Refuge Ravenswood Unit, and north of U.S. Highway 101 (US-101) and the Facebook campus. It then crosses under SR 84 and is bordered by SR 84 to the west and USFWS Pond SF-2 to the east. The Redwood City Maintenance Pond (the former SF-2 Donut) is bordered by USFWS Pond SF-2 to the south, tidal marsh to the east and north, and SR 84 to the north and west.

Purpose and Use of this Environmental Assessment

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental effects of the proposed Project and to identify possible mitigation measures to reduce any potentially significant impacts. This EA will support decisions made by the San Francisco Bay Conservation and Development Commission (BCDC) as the lead agency and other approval and permitting decisions to be made by responsible agencies in accordance with the California Environmental Quality Act (CEQA), including the California Public Resources Code (PRC) section (§) 21000 et seq., and Title 14 of the California Code of Regulations section 15000 et seq. (14 CCR § 15000 et seq.)

Under the McAteer-Petris Act, BCDC has regulatory authority over activities that could impact the San Francisco Bay or its shoreline, including salt ponds, as defined by the Act, and will be the lead agency for compliance with CEQA for the Project. The Secretary for the Natural Resources Agency has certified BCDC's permitting and planning programs under the McAteer-Petris Act as meeting the requirements of Section 21080.5 of CEQA (14 CCR § 15251(h)). Thus, in lieu of submitting a document as typically required under CEQA (such as an environmental impact report [EIR], mitigated negative declaration [MND] or negative declaration [ND]), BCDC instead prepares an EA in compliance with its regulations implementing its certified regulatory program as codified at 14 CCR §§ 11510 to 11521. As the CEQA lead agency for a project that will involve multiple subsequent discretionary agency approvals, BCDC has decided to prepare its EA in a manner that complies with the requirements of 14 CCR § 15253(b) so that other responsible agencies subject to CEQA can rely on it to fulfill their CEQA obligations.

BCDC and all responsible and trustee agencies will rely on the final EA when reviewing the Project for any subsequent permits or other approvals.

Public Review and Comment

Although CEQA requirements regarding public review of NDs, MNDs, and EIRs are not directly applicable to BCDC's EA process as a Certified Regulatory Program, BCDC has decided to draw from the public review timeframes applicable to CEQA documents to maximize public participation in the EA process (14 CCR § 15105). Thus, local and State agencies and the public will have the opportunity to review and comment on the draft document for a minimum of 30 days. Written comments received by BCDC during the 30-day public review period will be addressed as appropriate in the final EA.

BCDC will then review and consider the proposed final EA, together with any comments received during the public review process, prior to taking action on any permit application for the proposed Project.

Environmental Impacts and Proposed Mitigation Measures

The evaluation of environmental impacts provided in this EA considered all of the resource areas included in the CEQA Guidelines Appendix G Checklist, and focuses on the resource areas relevant to the proposed Project (refer to Section 3.1). Impact levels, as used in this EA, are defined as follows:

- **Potentially Significant Impact.** This impact level is assigned if there was substantial evidence that a Project-related environmental effect may be significant, and no mitigation measures were identified to reduce the potential effect to a less than significant level.
- **Less than Significant with Mitigation.** This impact level is assigned when the Project may result in a significant environmental impact, but the incorporation of Project-specific

mitigation measures into the Project will reduce the identified effect(s) to a less than significant level.

- **Less than Significant Impact.** This impact level is assigned when the Project would not result in any significant effects. The Project's impact is less than significant even without the incorporation of a Project-specific mitigation measure.
- **No Impact.** This impact level is assigned when the Project would not result in any impact to the resource.

Public Agencies Whose Approval May Be Required

Multiple permits will be required to implement the proposed Project. The following list shows the agency and the approval(s) that may be required by that agency. The permits required for a specific maintenance activity will depend in part on the location where the maintenance activity will occur.

BCDC:

- Permit

San Francisco Bay Regional Water Quality Control Board (RWQCB):

- Clean Water Act (CWA) Section 401 Water Quality Certification
- Waste Discharge Requirements issued pursuant to the authority of the State of California's Porter-Cologne Water Quality Act

CDFW:

- Incidental Take Permit
- Lake and Streambed Alteration Agreement

California State Lands Commission:

- Master Lease

California Department of Transportation (Caltrans):

- Encroachment Permit

U.S. Army Corps of Engineers (USACE):

- CWA Section 404 Permit
- Section 10 Rivers and Harbors Act Permit

National Marine Fisheries Service (NMFS):

- Biological Opinion (BO)

USFWS:

- BO

One other agency, the East Bay Regional Park District, may also rely on this EA.

Tribal Consultation

Native American tribes traditionally and culturally affiliated with the Project area have not requested consultation pursuant to PRC § 21080.3.1. In June 2020, BCDC initiated tribal consultation by requesting a list of tribal representatives from the Native American Heritage Commission (NAHC), as well as a search of NAHC's Sacred Lands file. On July 20, 2020, BCDC sent letters to the tribal representatives provided by NAHC. The letters notified the tribal representatives of the proposed Project and invited them to provide comments regarding the Project, share any information regarding possible Native American cultural resources which could potentially exist on the Project site, and identify any other potential concerns related to the proposed Project.

BCDC followed up with phone calls to the tribal representatives in August 2020. At that time, the Amah Mutsun Tribal Band of Mission San Juan Bautista indicated that the Project site is outside of their area, and therefore they would have no comment on the Project. Phone calls were made again in December 2020 and representatives of three tribes were reached for comment. The Amah Mutsun Tribal Band[1] representative indicated at that time that the Project is outside of their area, and therefore they would have no comment on the Project. The representative of the Indian Canyon Mutsun Band of Costanoan commented verbally that she recommends that there be an archaeological monitor and a Native American monitor present during any earth moving activity. The representative of the Ohlone Indian Tribe commented verbally that he affirms and supports the mitigation measures listed in this document.

[1] While their names are similar, The Amah Mutsun Tribal Band of Mission San Juan Bautista and the Amah Mutsun Tribal Band are separate tribes.

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

BCDC has regulatory authority over activities that could impact the San Francisco Bay or its shoreline, including salt ponds. Cargill and its predecessor companies have been operating salt ponds for solar salt production in the South San Francisco Bay since the turn of the 20th century, and have performed activities under BCDC permits since 1977. The most recent permit was issued in 1995. Cargill is proposing to continue operation and maintenance of its existing sea salt production facilities located in South San Francisco Bay (Figure 1-1).

Cargill's South San Francisco Bay facilities were once part of a larger network of solar salt producers. Since 1978 Cargill has been the sole operator of historic salt manufacturing plants in the San Francisco Bay area, having consolidated the operations of other plants. Since the issuance of its most recent maintenance and operations permit, Cargill has significantly reduced these operations and transferred significant portions of the plants to wildlife conservation agencies and organizations.

Cargill produces sea salt through solar evaporation of sea water. Sea water from San Francisco Bay is introduced into concentrators (also known as evaporation ponds), where a substantial portion of the water evaporates, resulting in a concentrated brine. The concentrated brine is then transferred to "pickle ponds" where evaporation continues until the brine reaches a concentration suitable for harvesting. Harvestable brine is transferred into crystallizers, where additional evaporation results in the precipitation of sodium chloride (NaCl, i.e., table salt). Concentrators, pickle ponds, and crystallizers are collectively referred to as "salt ponds." The solid and liquid products from the crystallizers are moved to and processed at the salt refining facility. No additives or chemicals are used to produce salt; solar and wind energy alone cause evaporation. In contrast to infrastructure maintenance activities, these specific salt production activities (i.e., the transfer of brine between ponds, and harvesting of NaCl and other salt products) and the final salt processing and refining steps are not subject to the permitting requirements that apply to sediment removal, placement of import/natural material, repair and replacement of certain structures, and other activities authorized by the permits Cargill holds and seeks to renew.

Cargill produces approximately 500,000 tons of NaCl along with other salt products on an annual basis. Salts are either sold in bulk or refined into a variety of salt products at the adjacent refinery in Newark. In addition to table salt, other products such as salts for de-icing and dust suppression can be harvested at different stages of the process.

To keep the operation in working condition and meet market demand, Cargill must maintain the existing earthen berms around the various ponds, pond intake and support structures, the salt ponds themselves, and the other various structures in the Project area. The majority of Cargill's maintenance and operations activities involve activities to ensure the smooth operation of these features.

2.2 PROJECT PURPOSE AND OBJECTIVES

The Project purpose is to continue maintenance of and operational activities at Cargill's solar salt systems in Newark/Fremont and Redwood City in a safe and environmentally protective manner over the next 10 years. The Project objectives include (1) continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure to ensure continued viability of salt production activities; (2) allow for implementation of preliminary sea level rise (SLR) adaptation efforts, including studies, and (3) permit Cargill to develop and implement alternative maintenance methods, as discussed herein, that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

The proposed Project is consistent with BCDC's San Francisco Bay Plan (Bay Plan; BCDC 2020) Salt Ponds Policy 1, which states:

> *The use and maintenance of salt ponds for salt production should be encouraged. Accordingly, property tax policy should assure that rising property taxes do not force conversion of the ponds and other wetlands to urban development. In addition, maintaining the integrity of the salt production system should be encouraged (i.e., public agencies should not take for other projects any pond or portion of a pond that is a vital part of the production system).*

2.3 FACILITY OVERVIEW

The Project area is composed of three primary locations (Newark Plant 1, Newark Plant 2, and the Redwood City Plant), Pond B-3C, and the Cargill West Bay areas (brine pipeline alignment, including the Transbay section of the pipeline, and Redwood City Maintenance Pond[2]) (Figure 2-1) that together comprise approximately 12,100 acres.

2.3.1 Newark Plant 1 and Baumberg Pond B-3C

The Newark Plant 1 complex is located west of Fremont, extending from Coyote Hills Slough/Alameda Creek (also known as the Alameda Flood Control Channel) on the north to the Union Pacific Railroad (UPRR) right-of-way (ROW) and the lower reach of Newark Slough to the south. The Plant 1 Project area encompasses approximately 4,100 acres and is located within the Refuge. SR 84, the approach to the Dumbarton Bridge, and Newark Slough traverse the southern portion of the complex. Baumberg Pond B-3C, an approximately 166-acre pond, is located north of Coyote Hills Slough/Alameda Creek, and adjacent to the CDFW's Eden Landing Ecological Reserve.

[2] The Redwood City Maintenance Pond is the former donut (small access pond) for Pond SF-2. Pond SF-2 has been transferred to the Refuge and restored to wildlife habitat.

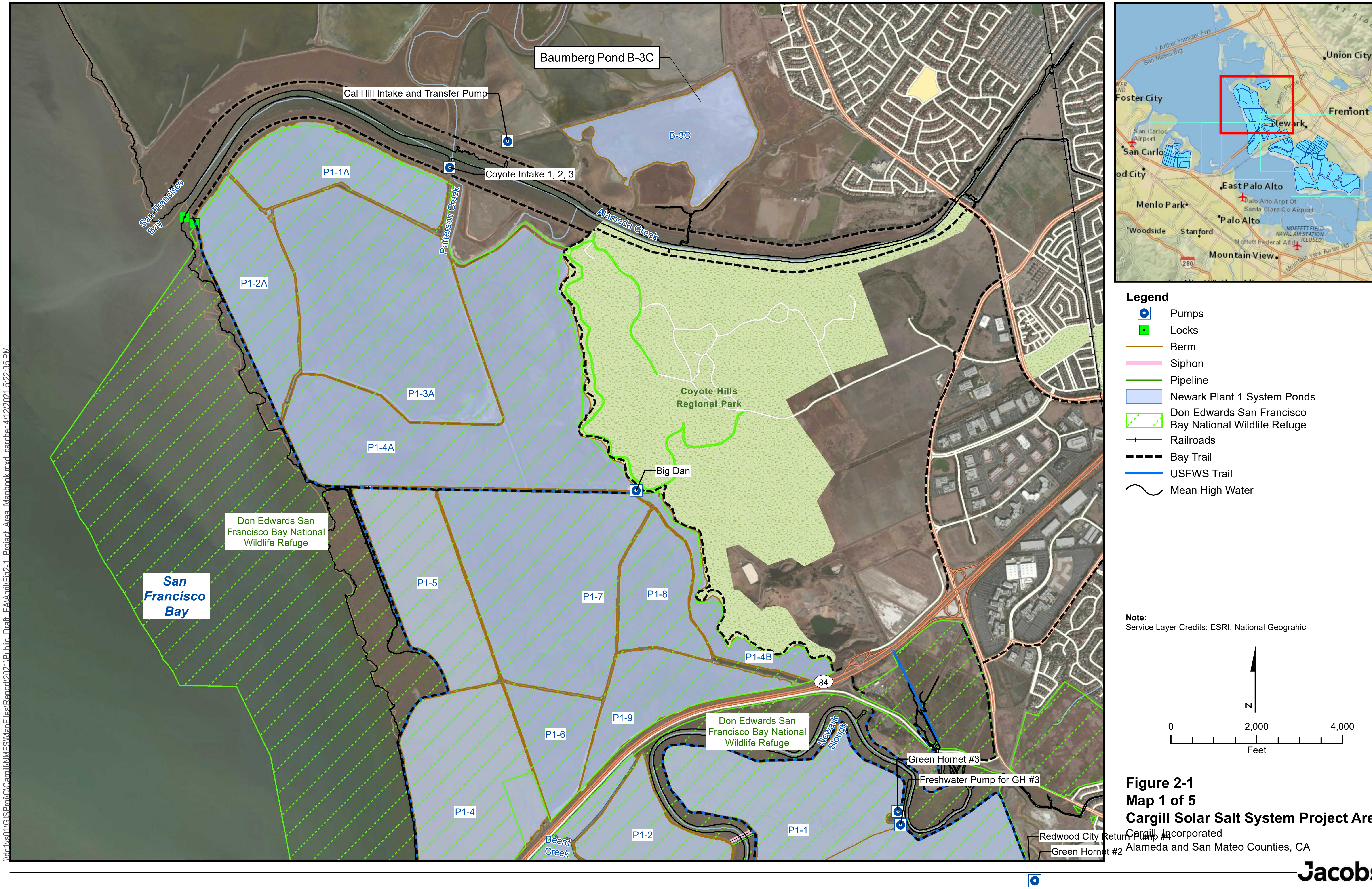


Figure 2-1
Map 1 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

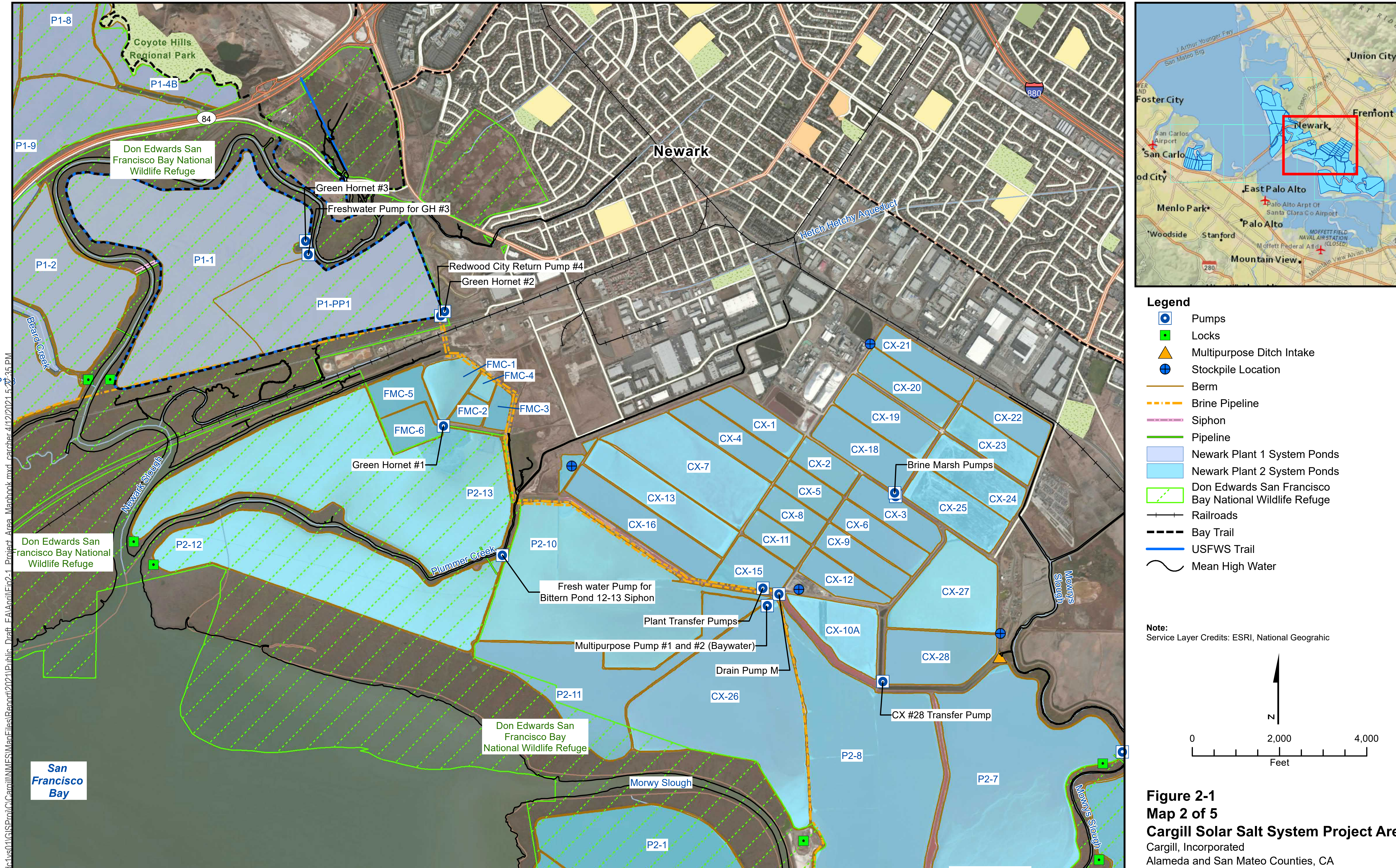
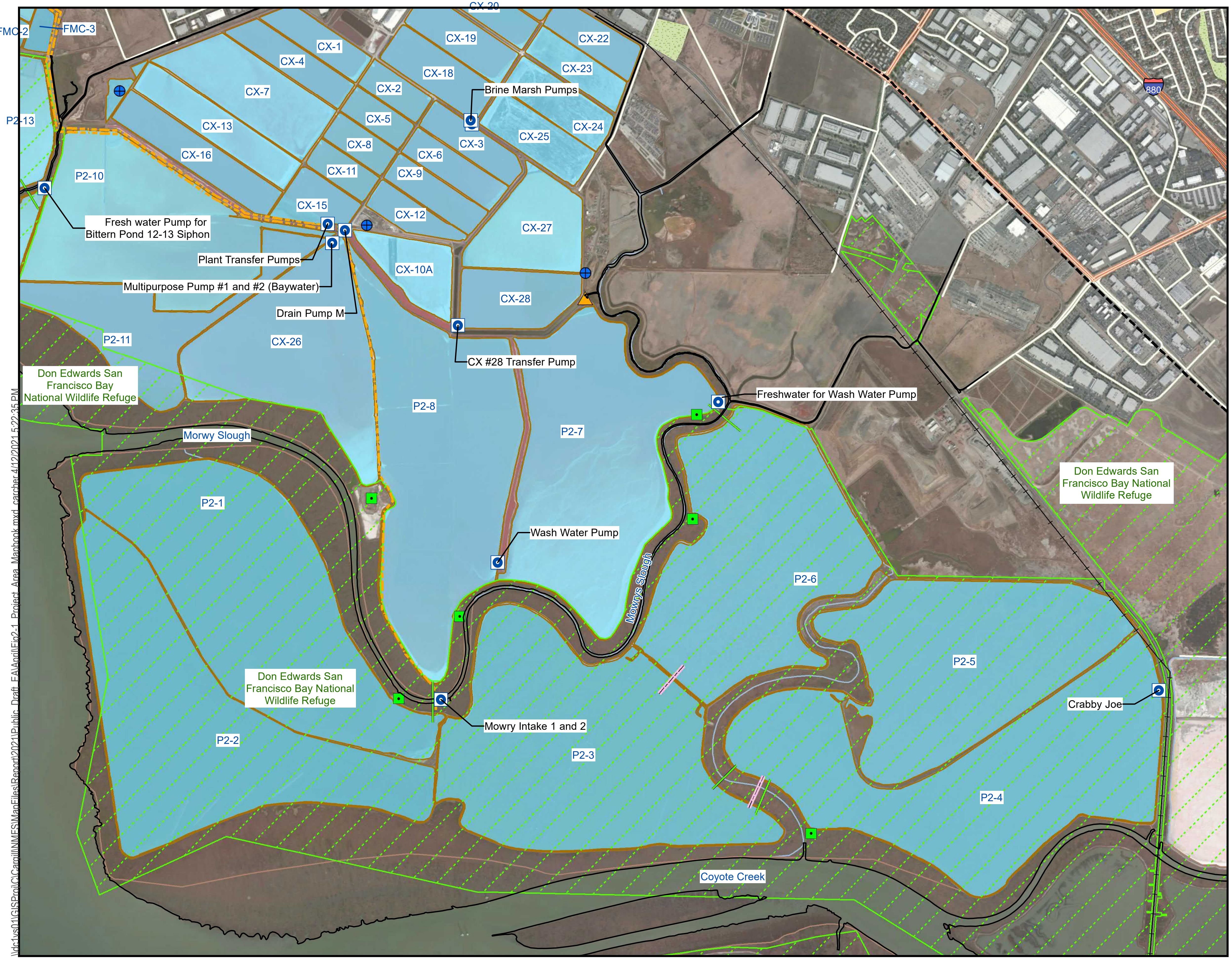


Figure 2-1
Map 2 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs



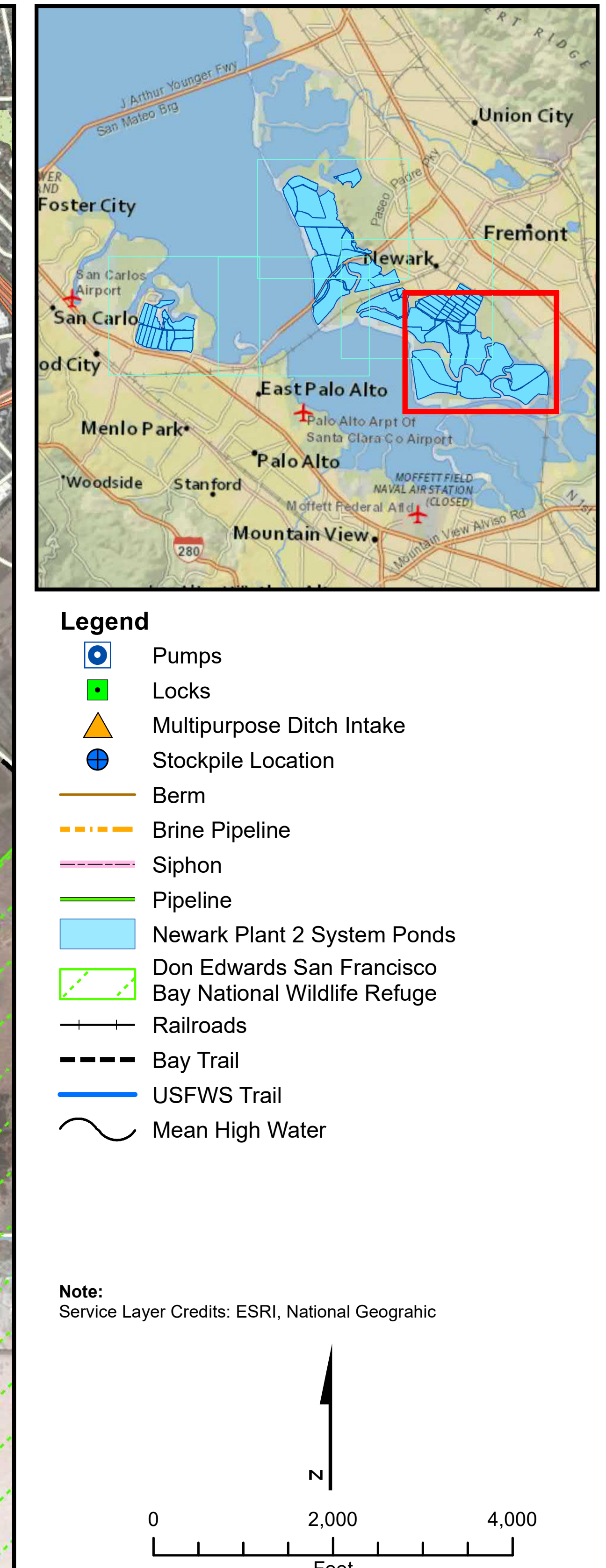


Figure 2-1
Map 3 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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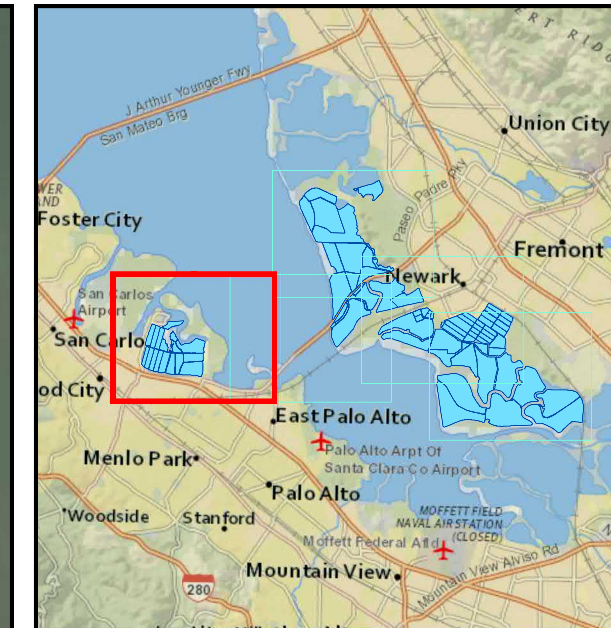

Legend

- Pumps
- Locks
- All Weather Drivable Berm (Graveled)
- Drivable Berm
- Other Salt Production System Berm
- Brine Pipeline
- Redwood City Plant System Ponds
- Don Edwards San Francisco Bay National Wildlife Refuge
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water

Note:
Service Layer Credits: ESRI, National Geographic

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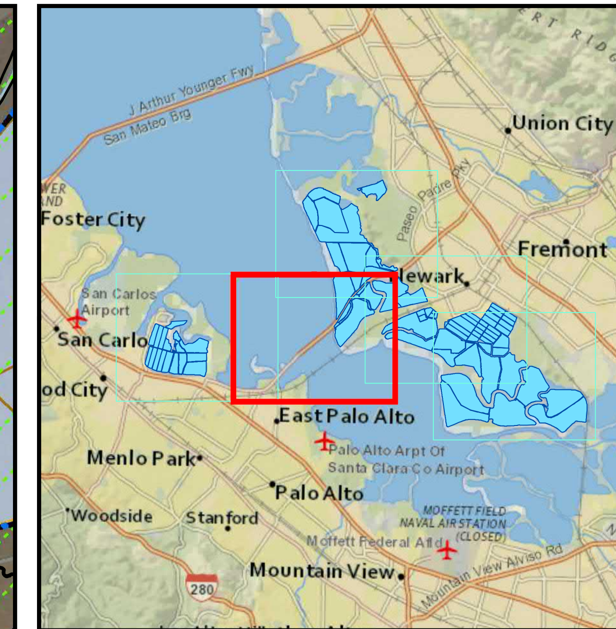
Figure 2-1
Map 4 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs



Legend

- Pumps
- Locks
- Redwood City Maintenance Pond
- Multipurpose Ditch Intake
- Stockpile Location
- Berm
- Brine Pipeline
- Siphon
- Pipeline
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Don Edwards San Francisco Bay National Wildlife Refuge
- Railroads
- Bay Trail
- USFWS Trail
- Mean High Water

Note:
Service Layer Credits: ESRI, National Geographic

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Figure 2-1
Map 5 of 5
Cargill Solar Salt System Project Area
Cargill, Incorporated
Alameda and San Mateo Counties, CA

Jacobs

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2.3.2 Newark Plant 2

The Newark Plant 2 complex is located south of Newark Plant 1. It is bounded by the UPRR ROW to the northwest, northeast, and east; by Mud Slough/Coyote Creek to the south; and by the Bay to the southwest. Plummer, Mowry, and Albrae Sloughs traverse or border the Plant 2 complex area. Plant 2 includes concentrators as well as crystallizers and encompasses approximately 6,400 acres. Mixed sea salts (MSS) are currently stored in Ponds P2-12 and P2-13. Approximately 3,020 acres are owned by Cargill and the remainder is within the Refuge.

2.3.3 Redwood City Plant and Cargill West Bay Areas

The Redwood City Plant is on the west shore of the Bay and is bordered by Redwood City to the west and south, Menlo Park to the southeast, and Redwood Creek and commercial/industrial facilities to the northwest. Westpoint Slough and Flood Slough form the northern and eastern borders between the Redwood City Plant and Greco Island (Greco Island is part of the Refuge). The Redwood City Plant encompasses approximately 1,430 acres.

The brine pipeline alignment connecting the Redwood City Plant to Newark Plant 1 includes a 10-foot wide ROW extending south and east from the Redwood City Plant to the Redwood City Maintenance Pond, as well as through the Transbay section of the pipeline. The Redwood City Maintenance Pond is a very small pond located at the northeastern corner of USFWS Pond SF-2, immediately southeast of SR 84.

2.3.4 Areas Adjacent to Salt Production Facilities

In this document, the salt pond facilities and brine pipeline alignment are referred to as the “internal” portion of the Project area. The internal portion of the Project area includes the ponds, internal berms, and inboard sides of outboard berms. The “external” portion of the Project area includes the Bay and slough sides of outboard berms and adjacent tidal habitats and sloughs. The Project area boundary is approximate and identifies general areas in which potential direct or indirect environmental impacts are assessed.

2.4 SALT MAKING AND SITE HISTORY

Natural salt pans (shallow areas isolated from the Bay during at least some tidal stages) occurred along the margins of San Francisco Bay prior to the beginning of human-controlled salt making. During the summer, Bay water within these pans evaporated, leaving various salts, including NaCl, known commonly as table salt or salt. Native Americans collected these salts which were used to preserve food and trade with other Native Americans who did not have a ready source of salt. The pans provided an example of how Bay water could be enclosed and how the natural forces of sun and wind evaporated the enclosed water, eventually allowing salts to drop out in a solid form. Food-quality salt is one of the end products of the solar evaporation of salt water (solar salt) process.

The managed solar salt industry began in San Francisco Bay during the mid-1850s. The first operations utilized simple earthen berms around naturally occurring salt pans in Alameda County to increase their natural salt production capacity. At this time, solar salt operations in the Bay were small family enterprises that utilized intensive hand labor for production and harvest. Nearly all of the salt produced in San Francisco Bay during this era was shipped to Nevada to be used for the processing of silver ore. By the late 1800s, approximately 37 salt production facilities had been established throughout San Francisco Bay. Most of these facilities were constructed by diking tidal marshes and installing controlled intake structures that captured Bay waters during extreme high tides to isolate the waters in shallow ponds. Salt operations in the South Bay included construction and maintenance of earthen berms to create and protect ponded areas, siphons, tide gates, pipes, pumps and other facilities for the production of salt.

By the early 1900s, the quality of the salt produced in San Francisco Bay had increased significantly and the market expanded to include fine or "table" salt. In 1936 the Leslie Salt Company (Leslie) arose from the consolidation of 19 small operations. Following this consolidation, Leslie and the Oliver Salt Company were the primary salt producers. The Oliver Salt Company, located at the foot of the San Mateo Bridge, ceased operations in the 1970s.

By the late 1970s, Leslie had acquired approximately 45,000 acres of land consisting of existing salt ponds and a variety of types of near-Bay lands (agricultural lands used for grazing and hay making, marshlands, salt pans and similar low-lying properties adjacent to San Francisco Bay as well as uplands) in support of salt production, and operated in both the North and South Bay. Leslie was producing over one million tons of salt on an annual basis from its entire operation. Leslie believed that its operations were exempt from the jurisdiction of BCDC and filed a claim of exemption.

In 1978, Cargill acquired Leslie and is now the sole producer of solar salt within the Bay area. Cargill currently owns approximately 4,100 acres in fee title and has operating rights on approximately 8,000 acres within the Refuge. In general, Cargill operates the solar salt system in the same manner as it was operated historically.

2.5 OVERVIEW OF SALT-MAKING PROCESS

The salt-making process today, including berm maintenance activities, the movement of increasingly saline brine between ponds, and the crystallization of salt in preparation for harvest, is essentially the same as what has occurred historically for at least the last 100 years. The process consists of eight basic steps.

1. Sea water is taken in from San Francisco Bay (once in the salt-making system it is referred to as brine).
2. The brine moves through a series of evaporation ponds (referred to as concentrators) until it reaches a salinity close to that required for salt (NaCl) to precipitate.
3. The highly concentrated, saturated brine is moved into pickle ponds where it is stored prior to harvest and where additional evaporation may occur.
4. During the harvesting operations, saturated brine is moved to the crystallizers, where additional evaporation occurs and NaCl is allowed to precipitate.

5. Brine remaining after NaCl is harvested in the crystallizers is moved to post-harvest ponds where additional NaCl may be recovered, and other salt products are harvested.
6. Harvested salt is washed with concentrated brine to remove sediment, and then rinsed with fresh or Bay water.
7. The washed salt is processed further into a variety of products.
8. Wash brine is moved to wash ponds to allow sediment to settle out, and then reused.

The salt-making process is a one-way system, i.e., all salts are retained within the system. It typically takes about two years from the intake of Bay water to salt harvest. The time required is primarily controlled by net evaporation rates. Annual net evaporation rates vary due to rainfall, wind, temperature and hours of sun. Evaporation generally occurs from April or May through October or November, with the highest rates during the summer months. A more detailed description of the salt-making process follows.

2.5.1 Salt-Making Process

The solar salt production process begins with the intake of Bay water, which enters the system through pumps or tide gates. Bay water is generally taken into the system during the highest tides in the dry months. Once in the salt production system, the Bay water becomes known as "brine." The brine is moved through a series of sequential concentrators until it reaches a concentration close to the point where NaCl would precipitate. Siphons, pipelines, and brine channels allow brine to be moved through the system and under sloughs and the Bay, as well as under infrastructure such as roadways. The brine is moved through the system by gravity feed and/or pumping.

Normal South Bay water salinity ranges from 10 to approximately 30 parts per thousand (ppt), depending on the time of year, whereas the brines at the point of salt precipitation reach approximately 350 ppt (10 or more times that of Bay water). The sequential process resulting in increasing salt concentration over time is essentially the same as the historic practice; however, weather and production conditions may dictate some changes to avoid brine imbalance in the sequential evaporation process. When the brine reaches saturation, it is transferred to crystallizers where its salt concentration is controlled using “pickle”–brine that is saturated with NaCl. Sodium chloride precipitation occurs within the crystallizers. The precipitated NaCl is harvested from the bottom of the beds.

After the majority of the NaCl is precipitated, the remaining brine, which primarily contains salts that are more soluble than NaCl, is referred to as mixed sea salts, or historically “bittern.” The MSS contain chloride, bromide, sulfate, sodium, potassium, and magnesium, as well as residual NaCl. These remaining MSS continue through the salt production process, where further NaCl may be recovered and additional commercial products used for road de-icing and dust suppressant are harvested. Excess MSS that has not been sold as an alternative salt product is stored in Ponds P2-12 and P2-13. Facing increasingly limited markets for these MSS-based products, Cargill has recently begun preparations to develop and seek entitlements for a separate project, the Enhanced Processing and Removal of Mixed Sea Salts project (the “MSS Project”). The MSS Project, if approved, would deploy innovative technology to achieve enhanced recovery of commercial product from the MSS. Residual salts would then be blended into the East Bay Dischargers Association (EBDA) wastewater conveyance system for ultimate discharged into the Bay, in compliance with EBDA's National Pollutant Discharge Elimination System (NPDES) permit. In addition to extracting additional salts from the inventory, this project would proactively address a potential long-term threat from SLR on the solar salt operations by reducing the volume and salinity of brines stored in ponds closest to the Bay. This potential project is considered in the cumulative impact analysis (Section 3.15). Consideration of the present Project that is the subject of this EA is not dependent on consideration of the MSS Project, which is currently in very preliminary stages of consideration.

As managed historically and as is the case with all solar salt plants, the goal of salt pond operations is to maintain liquid brines through the ponds on a scale of increasing salinity as the brine moves toward the harvesting facilities, but to avoid the precipitation of mineral salts before the brine becomes saturated with NaCl. Precipitation of mineral salts prior to the pickle ponds can cause operational problems. In addition, sufficient brine must be continuously contained in each pond so that a hydraulic connection is maintained from pond to pond. (In solar salt making vernacular, ponds must remain "covered.") This allows the brines to be moved toward the plant site either by gravity or pumping.

Controlling brine densities and brine movements throughout the system, while accounting for changing weather conditions, is the essence of solar salt making operations. To prevent salt from precipitating prior to its desired location, the brine concentration may be lowered, usually by adding less saline brine from concentrators or additional Bay water.

The types of ponds found at each plant site include, in order of its stage in the salt production cycle, (1) concentrators, (2) pickle ponds (these store feedstock brine for the crystallizers), crystallizers (for salt precipitation and harvesting), post-salt operation ponds (additional NaCl may be recovered to be recycled back into the pond system and other salt products are harvested), and wash ponds (these receive high salinity water that has been used to wash impurities from the salt). Typically, ponds closest to the crystallizers and within the plant sites have higher salinities. The key infrastructure required for salt production includes earthen berms, intake structures, pipes, brine channels, borrow ditches, and locks. These infrastructure components are described in more detail in the following subsections.

2.5.2 Earthen Berms

Cargill's solar salt system is separated from the Bay and from local streams and flood control channels by a system of approximately 123 linear miles of earthen berms, of which approximately 62 miles are outboard berms abutting the Bay, sloughs, and tidal marsh habitats (refer to Table 2-3 in Section 2.6.1). The earthen berms were constructed at various times and by various salt production companies from the 1860s to the 1950s. They were constructed of mostly native materials and completed prior to modern civil engineering standards. Earthen berms are maintained using native materials from borrow ditches adjacent to the inboard toes of the berms or imported clean material. The berms were built for the exclusive purpose of producing salt in shallow ponds. The berms were not constructed for flood control purposes, and flood control standards do not apply. However, the berms enclose the salt ponds, whose wide expanse does act as a buffer between the Bay and urban areas. The outboard berms are generally owned by USFWS. Cargill maintains these outboard berms, which is a benefit to USFWS. Table 2-1 presents key features of the current facilities utilized for salt production.

Table 2-1. Project Area Plants

Plant	Total Facility Acreage	Berms (linear miles)	Locks
Baumberg Pond B-3C	166	5	1
Newark Plant 1	4,100	98	4
Newark Plant 2	6,400	98	8
Redwood City Plant (including Cargill West Bay Areas)	1,433	20	2
Total	**12,099**	**123**	**15**

2.5.3 Intake Structures

Cargill pumps Bay water to start the salt making process and to regulate salinity levels and concentrations within the salt ponds. Intake structures are located at the beginning of the salt pond system where Bay water enters the pond system and begins the concentration process, as well as throughout the system to support the salt production process. Water intake structures and the associated pumps are located along tidal sloughs adjacent to the outboard salt pond berms. Intake structures consist of tide gates and pumps to bring Bay water into the system under controlled conditions. Cargill's water intakes are either directly connected to Bay water or connected to Bay water via tide gates that let water into a pumping area. Figure 2-1 shows the locations of all pump and tide gate intakes with connection to Bay water. Table 2-2 summarizes the various pumps and water conveyance structures within the Cargill system.

The primary use of the intakes is to provide Bay water to concentrate for salt production. Bay water is allowed to flow or is pumped into the intake ponds in the summer and early fall when it is usually at its highest salinities. Water is typically taken in during high tides. The main intake is on Coyote Hills Slough (Alameda Creek). Smaller quantities of Bay water are used to support salt making operations, such as removing precipitated salt from pumps, controlling salinities in the system, and near crystallizers as part of the harvesting effort. Intake periods for these types of uses would typically target lower salinity water. Bay water is currently taken in primarily between April and October.

Table 2-2. Water Intakes for the Cargill Solar Sea Salt System

Intakes	Pump	Approximate Volume of Water Pumped Per Year	Associated Slough/Creek
Tide Gate	Freshwater Pump for Green Hornet #1	2,000 acre-feet	Plummer Slough
	Fresh Water Intake Gate	3,000 acre-feet	Plummer Slough
	Multipurpose Pump #1 and #2 (Bay water)	5,500 acre-feet	Mowry Slough
	Mowry Siphon Fresh Water Pump	4,000 acre-feet	Mowry Slough
	Freshwater for Wash Water Pump	2,000 acre-feet	Mowry Slough
	Redwood City Bay Water Pumps 1 and 2	5,000 acre-feet	First Slough
	Freshwater Pump for Green Hornet #3	1,000 acre-feet	Newark Slough
Active Mechanical Pump	3 inches to 8 inches Temporary Pump	1,000 acre-feet	Plummer Slough/Mowry Slough/Newark Slough/Alameda Flood Creek/First Slough
	Fresh Water Pump for Bittern Pond 12-13 Siphon	1,000 acre-feet	Plummer Slough
	Mowry Intake 1 and 2	8,000 acre-feet	Mowry Slough
	Coyote Intake 1, 2, and 3	18,000 acre-feet	Alameda Creek

Note: Volume of water pumped in any given year varies based on weather and operational needs.

2.5.4 Pipes

Brines are conveyed between some ponds by pipes. Pipes may be located either above or below ground, or underwater. There is also a 7,000-foot, 20-inch-diameter steel pipeline slip-lined with 16-inch PVC that crosses the Bay from the Redwood City Plant to Plant 1 in Newark, referred to as the Transbay Pipeline. The pipeline has multiple pumps in series that provide the capacity to transfer brine in both directions.

2.5.5 Brine Channels and Internal Donuts

Brine channels (also known as brine ditches) are narrow, earthen, unvegetated channels used to convey brines between salt ponds. They serve the same purpose as pipes. The majority of brine flow occurs by gravity feed, although some pumping also occurs to move brine. Brine channels are typically located immediately adjacent to the salt ponds, and are connected to the salt ponds via “donuts” (small ponds with berms, similar to locks) that are internal to the salt pond system. Because the majority of the brine flow is by gravity feed, brine channels are constructed and maintained to ensure that flow occurs. Cargill also periodically has to construct or repair internal donuts to ensure that flow between brine channels can be maintained.

2.5.6 Borrow Ditches

As discussed previously, the earthen berms surrounding the salt ponds were constructed from native soils, and were also maintained in the past using native materials. These native materials were typically obtained from borrow ditches along the inboard (pond side) toe of the berm. As an excavator removes material adjacent and parallel to the toe of the berm a shallow channel or ditch is created ranging from approximately 4 to 6 feet in depth. Cargill continues to use these borrow ditches during berm maintenance to provide a source of sediment to maintain or repair or strengthen sections of the berm, where needed. Borrow ditches can be up to approximately 200 feet wide.

2.5.7 Locks

Locks are small ponds, generally less than 1 acre in size, that are used by water-borne equipment to access salt ponds. Use of the locks prevents a direct connection between a salt pond and external (Bay or slough) waters. To enter a salt pond, a barge-mounted excavator cuts through the outboard berm of the lock, then the equipment enters the lock, and then the excavator fills in the cut, once again sealing off the lock from the surrounding waters. The excavator then cuts through the internal berm of the lock to enter the salt pond, enters the salt pond, and reseals the internal berm of the lock. Amphibious excavators may cross over berms without needing to make a cut.

2.6 CURRENT SALT-MAKING PROCESS

Maintenance and operations methods have not changed substantially over the last 50 years. Cargill continues to use the same inherently sustainable, solar- and wind-powered evaporation process for making salt, except that the area being used for salt production has been decreased by approximately 55 percent since 1995 due to the transfer of land to federal and state governments and land trusts (as discussed in Section 2.7). By 2005, Cargill owned in fee title approximately 4,100 acres and retained operational rights for 8,000 acres owned by the federal government.

During the 1995 to 2005 timeframe, Cargill undertook a comprehensive evaluation to improve efficiency and production reliability in the overall system. This led to various infrastructure modifications and improvements, including the construction of infrastructure to allow the Redwood City Plant to be operated in support of solar salt operations at Plants 1 and 2 in Newark. These improved facilities (including the pipeline between the Redwood City Plant and Newark Plant 2) allowed brines and other liquids to be transported between plants. The ability to move specific volumes of brines where needed in the evaporation sequence was greatly enhanced with the installation of new high-density polyethylene pipelines throughout the system. The newly-installed pipes allowed the interconnection of Newark Plants 1 and 2 as part of the consolidation following the sale of 15,000 acres of South Bay salt ponds to the USFWS and State of California in 2003.

At the same time, several small gaps were constructed within internal berms to improve the flow of brines and provide enhanced access for maintenance of internal berms. Other system improvements included installation of redundant pumps to allow for routine scheduled maintenance, standardization of pumps to improve reliability and to reduce maintenance costs, and upgrades to pump platforms to meet current Occupational Safety and Health

Administration (OSHA) standards. In addition, Cargill developed techniques to increase the harvest of commercial products from mixed sea salt.

2.6.1 Changes to Salt-Making Facilities

Cargill filed an application in 1993 for a BCDC Permit that was first issued in March 1995 as Permit 4-93. Maintenance of and certain operational activities the current salt making system was formally permitted in the March 1995 permit (activities were permitted "within and adjacent to currently-operating salt ponds") and have continued to be authorized by a series of permit extensions since 2005. The permitted activities included maintenance of the infrastructure used to operate the salt production facilities, and infrastructure used to maintain the salt production system. In 1995, the "currently-operating salt ponds" encompassed approximately 26,100 acres, which consisted of approximately 145 ponds with over 200 miles of berms. Within the 26,100-acre South Bay salt production system, Cargill produced an average of one million tons of NaCl per year. Over the past few decades, a reduction in the amount of land needed to produce salt has occurred due to changes in market demand, land transfers requiring facility reconfigurations, and infrastructure improvements that enabled Cargill to produce salt more efficiently (through replacements authorized by the maintenance permit and new infrastructure authorized by permit amendments). Thus, although by 2005 there was a significant reduction in acreage utilized to produce salt and other products, annual production rates only decreased to approximately 500,000 tons. Table 2-3 presents approximate total acreages associated with the system in 1995 and 2005.

Table 2-3. Dimensions of Cargill Solar Salt System, 1995 and 2005

Complex	1995			2005		
	Total Acreage	Berm Mileage	Locks	Total Acreage	Berm Mileage	Locks
Alviso	8,300	-	-	N/A	N/A	N/A
Baumberg Pond B-3C	4,800	-	-	166	5	1
Newark Plant 1	3,900	-	-	4,100	98 (52.9 outboard)	4
Newark Plant 2	6,400	-	-	6,400	98 (52.9 outboard)	8
Redwood City (including Cargill West Bay Areas)	2,700	-	-	1,433	20 (8.8 outboard)	5
Total	**26,100**	**200**	**38**	**12,099**	**123**	**18**

Note:
Berm mileage is based on data collected as part of Cargill's Sea Level Rise Adaptation Study (AECOM 2020).
N/A = Not applicable

Cargill has continually reduced the footprint of its salt-making operations, and then transferred the available land to resource agencies and open space organizations. With the improvements made to salt production facilities from 1999 to 2005, the overall acreage needed for salt production was again significantly reduced, and more than half of the land previously used by

Cargill was made available for transfers. Section 2.7 summarizes the various land transfers from Cargill to the resource agencies and open space organizations.

Because Cargill now operates on a greatly reduced footprint compared to earlier periods, Cargill's maintenance efforts are similarly reduced (i.e., by more than half compared to the system when initially permitted in 1995). Consequently, any effects from Cargill's maintenance activities are also reduced substantially. In addition, Cargill has made other changes to improve the efficiency of its operations and reduce energy consumption. These changes include a more efficient salt harvesting process and investing in new, more-energy-efficient equipment such as pumps and motors. For example, Cargill has switched over to using variable speed pumps, which not only conserve energy, but also lower ponds brine levels more gradually, which is more wildlife friendly.

2.6.2 Mitigation

As part of its compensatory mitigation for the original project permitted in 1995, Cargill completed a 49-acre tidal restoration to provide habitat for the California clapper rail (now known as California Ridgway's rail [*Rallus obsoletus obsoletus*] [CRR]) and the salt marsh harvest mouse (*Reithrodontomys raviventris*) (SMHM). The restoration was undertaken to provide, for the purposes of USACE requirements, mitigation in perpetuity for impacts associated with maintenance activities over approximately 30,000 acres (as stated, Cargill now operates on only approximately 12,100 acres, and maintains 123 miles of berms). The USACE's letter approving the mitigation project further provided that the mitigation was "intended to satisfy the compensatory mitigation requirement for activities associated with the ongoing solar salt production in south San Francisco Bay" including, "if the nature of the work remains the same,... to subsequent permits as well." As explained in BCDC's current permit, the compensatory mitigation was designed to conservatively replace up to 17 acres of wetlands that might, at any given time, be in some state of restoration after being disturbed by Cargill's maintenance or operations (e.g., after accessing a lock). Complementing the compensatory measures for temporary loss of wetland habitat, Cargill's restorative Best Management Practices (BMPs) ensure that the net habitat available remains constant. The USACE's approval letter for this action is provided as Appendix A.

In addition, between 1995 and 1999, Cargill monitored the effects associated with implementation of newly proposed BMPs and submitted a results document summarizing the effects of implementing these BMPs (Cargill 2016). For example, the new BMPs for lock access/egress reduced actual impacts relative to those BMPs previously permitted by 25 percent on an annual basis, and by 47 percent, on average at each lock, on an area basis. Use of new BMPs increased the recovery rates of tidal marsh vegetation in the access cut with substantial recovery noted within 3 years (Cargill 2016).

In addition to restoration completed directly by Cargill, Cargill has made approximately 30,000 acres of former salt ponds available to resource and other agencies for restoration. Furthermore, Cargill also transferred over 400 acres of its lands to open space organizations.

2.7 PROPERTY TRANSFERS

Over the last 40 years, Cargill has transferred approximately 40,000 acres of its lands historically used for salt making for habitat restoration. As a result, approximately 90 percent of the salt ponds in the Bay Area have come under public ownership since the late 1970s. The following is a summary of the land transfers:

- 1979: 15,350 acres subject to retained rights in the South San Francisco Bay to the U.S. Government. Congress then designated the area as part of the Refuge. (Although Leslie transferred the fee title of this property to the federal government and reduced the property to public ownership, Leslie retained perpetual rights to produce salt on approximately 12,000 acres of the property.) Cargill purchased Leslie in 1978 and all rights within the agreements between Leslie and the USFWS transferred to Cargill.
- 1980: 110 acres to Shoreline Park in Mountain View and 200 acres to the State of California for the Dumbarton Bridge and access roads.
- 1981: 50 acres to Peninsula Open Space Trust and 80 acres to Hayward Area Recreation District.
- 1982: 150 acres to Mid-Peninsula Regional Open Space District.
- 1985: 70 acres to the Santa Clara Valley Water District (SCVWD) for flood control and 1,000 acres to the Marine Science Institute.
- 1992: 30 acres to the California Wildlife Conservation Board (CWCB).
- 1994: 10,000 acres to the CWCB, which increased California's state-owned wetland inventory by 30 percent.
- 1996: 860 acres to CWCB, located in the Baumberg area of Plant 1 (north of the current Plant 1 footprint). This property is now known as the Eden Landing Ecological Reserve.
- 2000: approximately 320 acres to SCVWD in the Alviso area located in San Jose. The purchase was made for future restoration and compensatory mitigation due to impacts associated with the Water District's Lower Guadalupe River Flood Protection Project (SCVWD 2002).
- March 16, 2003: 16,500 acres to the USFWS and the CDFW. Under the terms of this agreement, 5,500 acres of the Baumberg complex north of the current Plant 1 footprint, and 1,400 acres of the Napa Plant Site were transferred to CDFW; 1,600 acres of the Redwood City complex and 8,000 acres of the Alviso complex were transferred to the USFWS. The state and federal agencies, with Cargill's assistance, implemented an Interim Stewardship Plan for the salt ponds under their ownership until a final restoration plan was approved. Maintenance responsibilities and implementation of BMPs for these ponds and berms were transferred to CDFW and USFWS.
- 2005: 860 acres (Pond A18 in Alviso) to the City of San Jose to create a land banking opportunity and potential to restore the salt ponds.

- 2007: 250 acres (Pond SF-2) to the Refuge.[3]
- 2010: 20 acres to provide a critical link of the Bay Trail to the National Aeronautics and Space Administration, connecting 26 miles of trail from San Jose to East Palo Alto.

2.8 2008 TO 2019 MAINTENANCE EFFORTS

Specific maintenance activities and the extent of maintenance activities vary year to year, and are influenced by annual weather patterns, among other factors. The baseline used for impact analysis in this EA is the average annual level of activities completed between 2008 and 2019, and the analysis addresses the total estimated upcoming maintenance work for the next 10 years averaged over the 10-year permit period. This period was chosen to reflect the level of maintenance conducted on the current Project area footprint, and following the completion of the interim stewardship activities associated with the 2003 salt pond purchase by USFWS and CDFW.

The majority of maintenance activities over the past 12 years have been related to maintaining the tops of berms to ensure vehicular access to monitor salt ponds and the maintenance and replacement of infrastructure elements. Tables 2-4 through 2-7 at the end of this section present summaries for various activities and their frequencies since 2008. Proposed activities and completed activities are detailed in annual reports submitted to pertinent agencies (an example of these annual reports is provided in Appendix B).

As explained in more detail in Section 2.9.1, all earthen berms are inspected annually to identify areas requiring repairs, grading, riprap addition, and, for all-weather berms, gravel replacement. Typically only a small portion of the berms requires repairs each year. Repairs include raising low areas of berms, and repairing erosion where it is noted. In the 2018-2019 maintenance period, for example, Cargill repaired approximately 6,540 linear feet of berms (i.e., 1 percent of the total 123 miles of berms). Grading and replacement of gravel is typically required for all drivable berms each year; other berms are graded as needed. The current Project proposes grading/improving of berms, up to one mile per year, to a drivable condition. The length of berms graded and maintained each year is likely to increase slightly (by an estimated 1 mile per year) until the addition of drivable berms is complete. The repairs and replacements shown in Table 2-6 are for all infrastructure other than berms, and cover those events for which equipment entry into outboard areas is required. Repairs and replacements included items such as pumps, pipes, platforms, pilings, and tide gates. Multiple items may be included with one repair - for example, if an intake structure is overhauled, a new pump may be installed, the platform may be repaired, and new piping could be installed.

Cargill also periodically modifies internal pond connection locations (gaps in the internal berms) to allow it to modify flow patterns between ponds and increase vehicle access to a greater portion of the salt pond complex. Modifications may include replacing existing gaps in the internal berms with culverts and bridges to support vehicle traffic. Making more of the berms accessible by vehicles reduces the need to deploy equipment though the locks, and thereby

[3] Cargill retained the SF-2 Donut, and the land overlying its brine pipeline.

decreases potential effects on outboard habitat. Over time, Cargill intends to make all outboard and most inboard berms drivable. Maintenance conducted in areas adjacent to drivable berms is conducted entirely from the top of the berm; there is no access through outboard habitat.

Maintenance activities that are currently performed regularly and are expected to be performed pursuant to a new permit include, but are not limited to:

- Outboard and internal earthen berm maintenance and improving berms to drivable condition
- Access to or egress from locks
- Creation and use of material stockpiles
- Sediment removal from intake structures
- Maintenance of other infrastructure, which can include installation, repair or replacement of the following:
    - Riprap
    - Brine channels and internal donuts
    - Pumps, siphons, culverts, pipelines, other /brine control structures
    - Existing walkways, piers, trestles, or platforms, intake channels, and tide gates
    - Fences, vehicle gates, and access points from the berms into the ponds
    - Electrical distribution lines for service operations
    - Pumping donuts and internal coffer dams
- Minor fill and excavation
    - Minor excavation to provide access to repair and replace facilities
    - Other minor fill or excavation in the Bay, in managed wetlands and in salt ponds for purposes consistent with berm maintenance, access to salt ponds, use of locks, salt making, the placement of pipes, siphons, power, tidal control structures, and the prevention of erosion and repairs related to storm damage
- Modifications to internal flow patterns within the ponds, including re-establishing vehicle access on some internal berms by replacing existing gaps with culverts and bridges.

Table 2-4. Miles of Berms Maintained/Graded, 2014 -- 2019

Year	Newark Plant 1	Newark Plant 2	Redwood City Plant	Baumberg Pond B-3C	Cargill West Bay Areas	Total
June 2018 through May 2019	12.8	23.5	0.9	0	0	37.2
June 2017 through May 2018	7.3	12.5	0	0	0	19.8
June 2016 through May 2017	11.9	15.5	5.6	1.9	N/R*	34.9
June 2015 through May 2016	11.9	16.1	5.6	1.9	N/R*	35.5
June 2014 through May 2015	11.9	16.1	5.6	1.9	N/R*	35.5
June 2013 through May 2014	11.9	16.1	5.6	1.9	N/R*	35.5

Note: prior to the 2013 to 2014 maintenance season, miles of berms graded were not recorded.
* N/R = Not Recorded. Until 2017, all maintenance activities on the west side of San Francisco Bay were included with data for the Redwood City Plant.

Table 2-5. Locks Entered or Exited, 2008 -- 2019

Year	Number of Times
June 2018 through May 2019	N/A*
June 2017 through May 2018	N/A*
June 2016 through May 2017	0*
June 2015 through May 2016	0
June 2014 through May 2015	0
June 2013 through May 2014	0
June 2012 through May 2013	0
June 2011 through May 2012	3
June 2010 through May 2011	2
October 2008 through September 2010	3
April 2008 through September 2008	0
TOTAL	**9**

*Note: The Mallard dredge was decommissioned in 2016. A lock access/egress was mistakenly reported in the 2016 Annual Completion Report; this was a planned event that did not occur. In the absence of the Mallard no lock access events occurred in the 2017-2018 or 2018-2019 maintenance periods. Other equipment, as described in the text, will be used to access locks in the future.

Table 2-6. Number of Repairs or Replacements by Year, 2008 -- 2019

Year	Newark Plant 1	Newark Plant 2	Redwood City Plant	Baumberg Pond B-3C	Cargill West Bay Areas	Total
June 2018 through May 2019	0	1	0	0	0	1
June 2017 through May 2018	2	1	0	0	0	3
June 2016 through May 2017	2	0	0	0	N/R*	2
June 2015 through May 2016	1	0	0	0	N/R*	1
June 2014 through May 2015	0	0	0	0	N/R*	0
June 2013 through May 2014	1	0	0	0	N/R*	1
June 2012 through May 2013	1	1	0	0	N/R*	2
June 2011 through May 2012	1	2	0	1	N/R*	4
June 2010 through May 2011	1	0	0	0	N/R*	1
October 2008 through September 2010	0	0	0	0	N/R*	0
April 2008 through September 2008	0	0	0	0	N/R*	0
TOTAL 2008 through 2019	**9**	**5**	**0**	**1**		**15**

* N/R = Not Recorded. Until 2017, all maintenance activities on the west side of San Francisco Bay were included with data for the Redwood City Plant.

Table 2-7. Summary of Volume and Area of Work Conducted, 2008 to 2019[1]

Facility	Year	General Berm Maintenance		Riprap Repairs Inboard		Riprap Repairs Outboard		Lock Access/Egress	
		lf	CY	lf	CY	lf	CY	lf	CY
Newark Plant 1[2]	April to September 2008	3,500	3,000	-	-	-	-	-	-
	October 2008 to September 2010	3,500	3,000	-	-	-	-	-	-
	2010 to 2011	-	-	-	-	-	-	-	-
	2011 to 2012	150	200	-	-	-	-	-	-
	2012 to 2013	-	-	-	-	-	-	-	-
	2013 to 2014	21,000	-	-	-	-	-	-	-
	2014 to 2015	-	-	-	-	-	-	-	-
	2015 to 2016	420	300	-	-	-	-	-	-
	2016 to 2017	100	40	300	250	250	420	-	-
	2017 to 2018	2,700	-	200	500	500	-	-	-
	2018 to 2019	540	350	225	1,300	125	175	-	-

Facility	Year	General Berm Maintenance		Riprap Repairs Inboard		Riprap Repairs Outboard		Lock Access/Egress	
		lf	CY	lf	CY	lf	CY	lf	CY
Newark Plant 2	Apr to Sept 2008	6,600	0	500	750	-	-	-	-
	Oct 2008 to Sept 2010	48,400	1,000	-	-	-	-	-	-
	2010 to 2011	10,400	1,000	-	-	-	-	-	-
	2011 to 2012	1,900	-	5,000	1,800	-	-	-	-
	2012 to 2013	-	-	-	-	-	-	-	-
	2013 to 2014	13,200	11,025	-	-	-	-	-	-
	2014 to 2015	18,000	9,320	-	-	-	-	-	-
	2015 to 2016	5,400	2,440	-	-	-	-	-	-
	2016 to 2017	3,200	1,500	-	-	-	-	-	-
	2017 to 2018	25	-	-	-	-	-	-	-
	2018 to 2019	1,000	120	500	700	-	-	-	-
Redwood City Plant[3]	Apr to Sept 2008	2,600	800	-	-	-	-	-	-
	Oct 2008 to Sept 2010	2,200	0	-	-	-	-	-	-
	2010 to 2011	-	-	-	-	-	-	-	-
	2011 to 2012	-	-	-	-	-	-	-	-
	2012 to 2013	-	-	-	-	-	-	-	-
	2013 to 2014	5,500	1,365	-	-	-	-	-	-
	2014 to 2015	-	-	1,050	1,050	-	-	-	-
	2015 to 2016	5,000	-	500	625	-	-	-	-
	2016 to 2017	-	-	-	-	-	-	50	400
	2017 to 2018	-	-	-	-	-	-	-	-
	2018 to 2019	5,000	350	-	-	-	-	-	-

Notes:
[1] The quantities reflected in this table are taken from the Annual Completion Reports documenting the actual repair and maintenance activities conducted each year.
[2] Includes Baumberg Pond B-3C quantities.
[3] Includes Cargill West Bay quantities.
lf = linear feet; CY = cubic yards

2.9 PROJECT COMPONENTS

Cargill will continue to maintain its facilities as it has in the past. Production rates are anticipated to continue at approximately 500,000 tons of NaCl, in addition to other salt products, annually – activities which are not subject to the current permit and not part of the current proposal. Elements of the solar salt system will age, and repair and replacement of older structures is expected to be necessary. Berm maintenance is required throughout the salt pond system due to erosion, subsidence and consolidation. Maintenance of the following elements/structures is required:

- Earthen berms: Outboard and internal berms that contain the system and are used to access the salt ponds. Berms may also be used by mosquito control districts to access areas on and adjacent to the plant sites for mosquito control activities.
- Intake structures: Tide gates and pumps to bring Bay water into the system under controlled conditions, and the associated intake channels.
- Pumps: Multiple pumps are located throughout each Plant. Typically, they are located between ponds and salt plants and are used to move brines within the system. The pumps used range in capacity from 2,000 to 30,000 gallons per minute.
- Siphons: Siphons are used to connect ponds beneath water courses such as sloughs and flood control channels.
- Pipes and brine channels: Brines are conveyed from one pond to another by pipes and brine channels located between salt ponds, and the Transbay Pipeline conveys brine between Newark Plants 1 and 2 and the Redwood City Plant.
- Borrow channels: Borrow channels are utilized during berm maintenance to provide a source of sediment to maintain or repair or strengthen sections of the berm where needed.
- Platforms, walkways, and bridge structures: These structures provide safe access for employees to pumps and other infrastructure elements of the solar salt system.
- Miscellaneous infrastructure such as fences, gates, and electrical systems.

Figure 2-1 shows where key infrastructure components are located in the Project area.

2.10 PROPOSED WORK

Cargill has developed estimates of the projected annual maintenance efforts that would be required during the term of the proposed permit (10 years), as shown in Tables 2-8 through 2-10. Although during any given year specific activities and their frequency may vary depending on need, the need for maintenance will continue beyond the projected 10 year permit term (i.e., will continue as long as Cargill's system is in production). (Cargill will apply for future permit renewal to authorize maintenance beyond the proposed 10-year period under the current authorization effort when the time becomes necessary.) Berm maintenance will likely increase slightly each year as the extent of drivable berms increases. In addition, there may be a temporary increase in lock access and egress, as well as the yearly number of repairs and/or replacements of infrastructure. Lock access/egress events are expected to decline over time as more of the berms are made drivable and more work on the berms can be accomplished from the tops of the berms.

All of the berms are inspected each year to identify where maintenance is needed. Locks are accessed on a rotating schedule approximately every 2 to 15 years, depending on the maintenance needs of the berm system. Locks would be taken out of service when it is determined that they are no longer required for berm maintenance.

Cargill must also replace or repair various structures such as pipes, pumps, gates, and platforms. Based on past work it is anticipated that up to 12 repairs or replacements on average need to be conducted per year.

Cargill develops an annual proposed work plan which sets forth anticipated maintenance activities for the coming year. This plan is submitted to the BCDC, RWQCB, CDFW, NMFS, USACE, USFWS, and the U.S. Environmental Protection Agency (USEPA) as well as other interested parties by March 1st of each year. Cargill coordinates with BCDC, RWQCB, and USACE for final approval of the plan before initiating maintenance activities. Once the final notification is submitted proposed work may proceed. A completion report of activities actually conducted is submitted every August 1st. An example of these reports is provided as Appendix B.

Table 2-8. Projected Annual Average Miles of Berms to be Maintained/Graded, 2019-2028

	Newark Plant 1[1]	Newark Plant 2	Redwood City Plant[2]	Yearly Total
Yearly Average	16	18.5	7	**38.5**
10-Year Total	140	160	60	**385**

Notes:
[1] Includes Baumberg Pond B-3C quantities.
[2] Includes Cargill West Bay quantities.

Table 2-9. Projected Annual Average Lock Access/Egress, 2019--2028

Facility	Number of Locks	Yearly Average Access/Egress	10-Year Average
Newark Plant 1[1]	4	2	20
Newark Plant 2	8	2	20
Redwood City Plant[2]	2	0.25	2.5
Yearly Total	**14**	**4.25**	**42.5**

Notes:
[1] Includes Baumberg Pond B-3C quantities.
[2] Includes Cargill West Bay quantities.

Table 2-10. Projected Annual Average Number of Repairs/Replacements of Various Structures, 2019--2028

Plant	Newark Plant 1	Newark Plant 2	Redwood City Plant	Pond B-3C and Cargill West Bay	Yearly Total
Yearly Average	4	7	0.5	0.5	12
10-Year Total	**40**	**70**	**5**	**5**	**120**

2.10.1 Earthen Berm Maintenance

Maintenance of earthen berms is conducted to raise, fortify, and prevent degradation of the berms, which protect the salt ponds. In addition, maintenance is required to maintain berms in drivable condition and to make non-drivable berms drivable. Maintenance typically includes grading, providing access for maintenance equipment, and weed management. Addition of material to berms is required periodically to maintain each berm's integrity and ancillary uses (e.g., vehicle/equipment access). This material may be placed from the landside (top of berm) or from within the ponds by an amphibious or barge-mounted excavator. Material for berm maintenance would be obtained either from borrow ditches inside the ponds, or from landside equipment transporting clean imported material from off-site sources from designated stockpile areas. Cargill requires documented testing data demonstrating that imported material meets its standards for clean material.

Maintenance of berms occurs on an as-needed basis and predominantly involves placement of material on the top and inboard slopes of berms to raise subsided areas and repair areas that are showing signs of erosion. Erosion may occur on both internal berms and outboard berms. The average miles of berms that needed maintenance work over the last 10 years is shown in Table 2-4. In addition, because the berms were constructed of native materials and not designed to engineering standards, the cores of certain berm sections sometimes require strengthening. This process, referred to as berm core compaction, reduces the permeability of the berms to ensure that brines remain safely contained in the salt ponds.

The values shown in Table 2-4 do not include placement of gravel on all-weather drivable berms. The rate at which berm maintenance work can be accomplished ranges from about 50 linear feet of berm per hour to hundreds of linear feet of berm per hour depending on weather, wind, brine levels, traffic on the berm, access to the berm, bird usage, public use (most of the berms on Refuge lands are open to public access), whether the pond is open to hunting, and other factors. In addition to the routine maintenance of berms, including raising the areas of berms that have subsided, the Draft Sea Level Rise Assessment developed for the Project area (AECOM 2020) identifies high priority berms that could be overtopped by a combination of 6 inches of SLR and a 100-year storm event. Cargill has determined that raising these high priority berms is an essential maintenance activity to minimize the risk of overtopping the berms. The high priority berms would be raised the high priority berms would be raised up to approximately 12 inches over their existing elevation. This level of raising is similar in magnitude to that which has historically been performed for subsided berms. The process of raising a berm as part of the SLR adaptation is identical to that of raising a berm as part of routine maintenance. The specific processes used to maintain various sections of the berms are described in detail in the following subsections.

2.10.1.1 Top and Inboard Side of Berms and Inboard Top of Slope

Top and inboard sides of berms are maintained by using material excavated from inside the ponds and imported clean material provided by outside contractors implementing non-Cargill projects who are seeking a soil reuse opportunity. All imported material must meet Cargill's clean material specification (Appendix C). Consistent with current practices, the imported material would be stored in a designated stockpile area and moved to the maintenance location by trucks, or could be delivered directly to the work area if timing permits. Dozers and graders and other equipment would be used to place the material.

To prevent material from moving onto the outboard side of the berm on bayfront berms, a choker berm is constructed. A choker berm is a very small berm (typically 6 inches high or less, and less than 1 foot wide) on the outer side of the berm top. Figure 2-2 shows a typical choker berm and Figure 2-3 presents a typical cross section.

The choker berm would be built up before the main work on the top of berm is conducted. Material would then be added to the top of the berm and graded so that the berm top slopes inward from the outboard edge toward the inboard/salt pond side of the berm. If any material accidentally falls into the marsh, despite of the use of the choker berm, it would be removed as soon as possible, unless removal would be more impactful to habitat than leaving the material in place.

Figure 2-2. Example of Choker Berm and Inward Slope on Berm
Note: The outboard side of the berm is to the left (vegetated tidal marsh); the open water on the right is a salt pond.

As detailed in Section 2.13 (Best Management Practices for Maintenance Work), staff and/or contractors must complete required training and would document all activities in daily logs as per the annual Work Plan and reporting requirements.

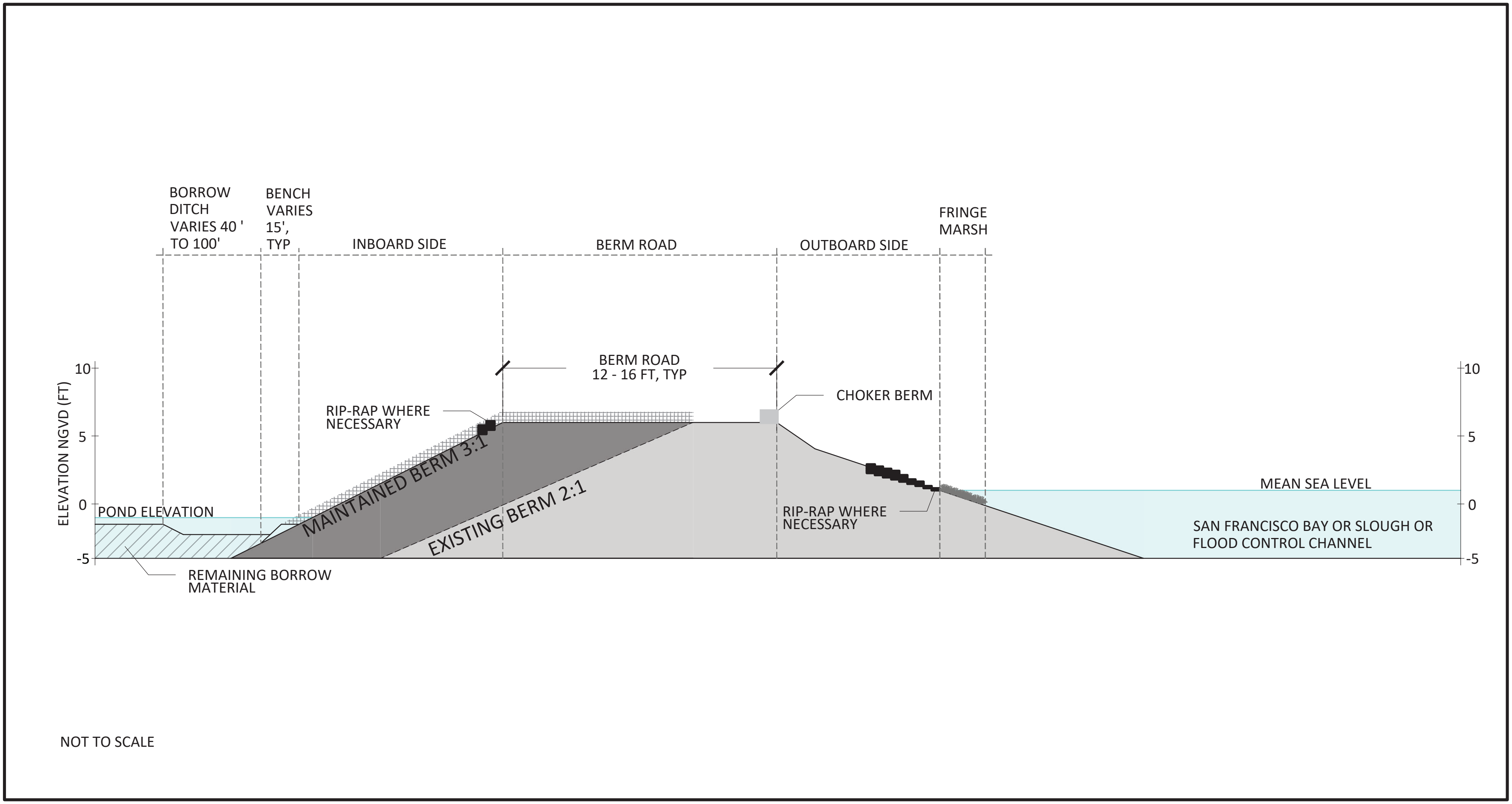

Figure 2-3
Salt Pond Berm:
Typical Cross Section
Cargill, Incorporated
Alameda and San Mateo County, CA
Jacobs

To ensure access to all locations within the Project site, some earthen berm tops must be graded to support vehicle and equipment traffic. All-weather berms can be driven on during the winter and during the wet season whereas the other berms that are not graveled cannot be driven on during the wet season. The gravel on the all-weather roads must be replenished periodically. Driving on wet berms can cause extensive damage to the berm and vehicle involved. To address this safety concern, four-wheel drive vehicles are not allowed on wet, non-graveled berms and there must be several days without any rain in order to drive on non-graveled berms.

To make berms drivable, Cargill typically grades the berm, places a layer of filter fabric, places sufficient soil to bring the berm up to its typical elevation (soil is placed in 6-inch lifts if more than 6 inches of soil are required), compacts the soil, and then places 6 inches of gravel on top of the soil. Cargill currently increases the extent of berms that are drivable by about 1 mile per year, and anticipates continuing to do so each year over the next 10 years; this will continue to require approximately 5,500 cubic yards (CY) of imported material each year.

During ongoing maintenance, which only requires placement of material, berm tops are disked and graded after placement of the material. If native materials are used, disking typically occurs two to four years after material is placed on the top side of a berm. This allows the material to consolidate and dry prior to disking and grading. The length of time required for drying depends on the composition of the material; higher salinity material takes longer to dry. The top of the berm usually requires two to three passes over the material to properly disc. Stakes are used along the length of the berm to set the grade level (as shown in Figure 2-4) and may require the use of a laser to ensure the top of the berm is level and has the proper slope. Stakes are also used to delineate sensitive habitat to clarify for workers which areas must be avoided. When imported material is used to maintain a berm, it can typically be graded and disked immediately.

For berm core compaction, Cargill excavates an approximately 30-inch-wide section of the center of the berm to a depth of up to 9 feet. The excavated core section is backfilled with low-permeability clean imported material that is compacted in place. The soil excavated from the core of the berm is placed on the inboard (salt pond) side of the berm. In the past 10 years, Cargill has completed approximately 4 miles of berm coring; Cargill anticipates completing 2 miles of berm coring over the next 10 years. The reduced berm core compaction effort would reduce imported soil requirements by approximately 9,500 CY, or about 1,000 CY per year.

Placement of riprap on the inboard side of the berms will be necessary in some locations due to continued erosion from high wind/wave energy. Riprap would be maintained (replenished) on an annual basis, as needed. The amount of riprap placed would be the minimum required to provide the necessary protection. Riprap would only be used in areas free of vegetation. Riprap material is inspected to ensure that it is clean, does not contain debris or any rebar or wire, and is of the appropriate size to prevent erosion (0.25 to 14 cubic feet). Areas needing riprap would be staked in advance of any work to delineate the area for placement.

Figure 2-4. Example of Stakes Being Placed to Set the Grade Level

In some areas with severe erosion, the berm itself would be repaired before riprap is put in place. Typically, clean imported material would first be placed within the zone of erosion, then filter fabric would be placed over the imported material and then riprap would be placed as the final erosion prevention layer. Staff would record the dimensions of the riprap area as well as the volume of material used to repair the area of erosion.

As indicated in Table 2-7, in the past the need for riprap placement events on the inboard sides of berms has been variable year to year, as has the size of any specific event. This pattern is expected to continue for the proposed Project. The annual Work Plan would provide detail on areas proposed to be maintained. The quantities of material and riprap shown in the Work Plan will be the best information available to Cargill at the time the Work Plan is submitted. Nonetheless, it may be possible that additional work not shown in the Work Plan would be required in specific areas. If this additional work exceeds the area delineated in the Work Plan by 10,000 square feet or more, then a revised Work Plan would be submitted to the pertinent regulatory agencies, and any necessary regulatory approvals would be obtained prior to commencing the work as required by the applicable permits.

2.10.1.2 Inboard Slope and Internal Berm Maintenance

Consistent with current operations, inboard sides of outboard berms would be serviced by either land-based equipment (from the top of the berm) or from inside the pond. Instead of the Mallard, which was retired in 2016, Cargill would use a barge-mounted excavator or other alternative equipment used in the industry, such as an amphibious excavator for work from inside of a pond. Cargill uses land-based equipment wherever possible to minimize the potential effects on outboard (tidal marsh and/or mudflat) habitat. The selected equipment would be capable of reaching the full extent of the slope. Fill material delivered by truck from the designated stockpiles would be placed on the top portion of the inboard side of the berm.

Figures 2-1 provide locations of locks and land launching areas; Figure 2-5 provides the view of a typical outboard berm abutting marsh habitat. The lock access and exit process is described in Section 2.10.2.

In some cases material for berm maintenance may come from the borrow ditch at the toe of the berm. The excavator would remove material from the borrow ditch parallel to the berm section being maintained. The excavated material from the borrow ditch would be placed on top of the berm or along the inside top of slope of the berm. The process then continues by placing material from the top of the slope and slowly working down to the pond elevation.

Figure 2-5. Typical View of Salt Pond Outboard Berm Abutting Marsh Habitat

2.10.1.3 Outboard Sides of Outboard Berms

Other than lock access/egress, berm repair work would not be conducted from the Bay side. Typically, maintenance work conducted on the outboard portions of the berms would be conducted using land-based equipment from the tops of berms.

Placement of riprap on the outboard side of the berms will be necessary in some locations due to continued erosion from high wind/wave energy. Riprap would be maintained as needed (Figure 2-6). Typically, riprap would only require replenishing, unless erosion is severe. As for riprap placement on the inboard side of berms, in severely-eroded areas clean, imported material would first be placed within the zone of erosion, then filter fabric would be placed over the imported material and riprap would be placed as the final erosion prevention layer. The amount of riprap placed would be the minimum required to provide the necessary protection. As previously stated, riprap material would be inspected to ensure that it is clean, does not contain debris or any rebar or wire, and is of the appropriate size to prevent erosion (0.25 to 14 cubic feet). Appendix C provides Cargill’s specifications for acceptable riprap. All placement on outboard slopes of berms would be conducted such that an outboard slope of approximately 4:1 would be maintained. This flatter slope provides improved erosion resistance relative to steeper slopes. As for riprap repairs on inboard slopes, the need for riprap repairs on outboard slopes varies greatly year-to-year (Table 2-7). Scheduled repairs for outboard berms are included in the annual Work Plan.

Sidecast material from the Bay would not be utilized to stabilize the Bay side of outboard berms. If work must be conducted on the outboard side of a berm, a silt fence would be installed surrounding and in close proximity to the eroded area to prevent resuspension of sediments or dispersion of sediment into Bay waters.

Figure 2-6. Riprap Placed on Outboard Side of Berm

2.10.1.4 Sea Level Rise Adaptation

Cargill proposes a proactive approach to protecting the salt production system from SLR which in turn helps ensure that the Bay's natural resources continue to be protected. Cargill developed a resiliency program that evaluates the SLR vulnerability of the salt production system and has developed adaptative management strategies to address the findings of the vulnerability studies. These studies assist Cargill in better understanding the Project area's vulnerability to existing flooding, potential future flooding, and other potential future SLR hazards, such as increased potential for permeation of Bay water through berms. As part of the studies, Cargill identified potential adaptation strategies to incorporate into ongoing and future maintenance and operations. In the near-term Cargill would prioritize and manage berm maintenance through the lifetime of the proposed permit.

In addition, Cargill would focus on targeted areas most susceptible to overtopping. In these targeted areas, Cargill would raise the berms, up to approximately 12 inches. Cargill would also employ some non-physical adaptation strategies, including development and implementation of an SLR monitoring plan. Berms would be raised incrementally using soil as a primary mechanism to reduce the risk of overtopping during an extreme storm surge, thereby addressing the most direct impacts of SLR. However, elevating and/or widening the berms would provide very little additional resistance to erosion in the event that overtopping occurs; other berm strengthening efforts are required to increase the berms' resistance to overtopping.

As described previously, riprap would continue to be used where needed to ensure berm integrity based on the specific location where erosion may occur. Berm core compaction, monitored to ensure effectiveness against permeation, would also be used in selected locations. In addition, Cargill is evaluating potential alternative management methods including:

- Alternatives for back-fill material used in repairing eroded areas, such as using concrete mats to control erosion on internal berms
- Vinyl sheet piling berm inserts to provide more permanent mobility control and reduce the risks of overtopping

Cargill intends to evaluate the various alternative approaches for ensuring berm integrity to assess their viability and their effectiveness with regard to projected SLR. Unless alternative methods proposed as “field tests” at appropriate locations under the current Project are demonstrated to have less-than-significant impacts, Cargill would continue to use existing methods (such as riprap) to ensure berm integrity both on the Bayward and inboard sides of the berms throughout the system. In order to justify implementation of these new methods as “field tests,” Cargill would first evaluate the potential impacts associated with those methods in the context of this EA and any applicable permit conditions (including, for example, post-implementation evaluation of the new method “field tests”). If any potentially more significant or new impacts are identified, as mentioned, existing methods to ensure berm integrity would be re-implemented, and supplemental or subsequent environmental analysis would be performed and submitted to the regulatory agencies for review in order to authorize any further new method(s) to ensure berm integrity taking into account SLR.

Specifically, as part of the proposed Project Cargill would initiate a field test of vinyl sheet pile (Figure 2-7) on the pond side of berms at vulnerable locations and monitor the efficiency of this approach relative to historical berm core compaction activity. Should the field test prove the vinyl sheet piles are effective, Cargill may propose that the vinyl sheet piles replace a portion of the berm core compaction activities proposed in this EA as the standard method for ensuring berm integrity taking into account SLR. Any such more extensive use of vinyl sheet pile would be subject to additional environmental review and potential permitting processes. Cargill is proposing to field test the use of vinyl sheet piles because they are currently used in the Bay Area for multiple purposes including seepage reduction, waterfront bulkhead or retaining walls, and protection from waves or stormwater floods. The use of vinyl sheet piling for various levee/berm structures has been implemented in multiple San Francisco Bay area and California coastal projects (e.g., Redwood Shores, Marin County Stinson Beach, and the Las Gallinas levee system in San Rafael). They also have a very long service life (50 years or more). Vinyl sheet piles are corrosion resistant and are largely maintenance free once installed. Compared to use of steel and concrete sheet piles, which require heavy equipment at the jobsite for unloading and staging, vinyl sheet piles are relatively light and easy to handle. Use of vinyl sheet piles would therefore require lighter weight equipment on the berms. Due to their strength to weight ratio, vinyl sheet piles are considered a better choice than heavy concrete or steel in the typical high silt sediments of the Bay. USACE has analyzed long term applications of vinyl sheet piles and found them to be a reliable material for various applications which also provides for lower construction cost alternatives (USACE 2003).

Cargill currently estimates that the sheet pile wall would be approximately 500 to 600 feet in length. There would be no work on the outboard sides of the berms. The vinyl sheet piles would be installed using a vibratory driver with a special attachment to push the sheet piles into the ground, or equivalent technology. The sheet piles would be sealed with a low ecotoxicity, solvent-free sealant (EOA, Inc. 2019). The purposes of the evaluation would be to determine the effectiveness of the sheet piles against permeation or overtopping relative to existing methods; evaluate the ability to install the vinyl sheeting over an extended length of the berm in an efficient manner; observe the flow of rain water around the barrier to confirm that the design avoids creating saturated zones after rain events; monitor durability of the vinyl sheet pile to confirm that it resists wear and tear due to weather and vehicular traffic; and evaluate the ability to easily extract the vinyl sheet piling in an efficient manner. Should the sheet piles prove to be ineffective, Cargill will remove them, most likely by pulling them out of the ground with the same special attachment used to install them. Specific details regarding the activities to be completed as part of this study would be provided as part of the annual Work Plan for the year in which the study would be initiated.

2.10.1.5 Weed Management

San Francisco Bay tidal marshes and adjacent habitats have been invaded by a number of highly invasive, non-native weeds, which can crowd out native plants and make the habitat unsuitable for native wildlife. When left unattended, invasive weeds can require major efforts to control. The 2009 Cargill Weed Management Plan (Cargill 2009), as modified by the 2013 South San Francisco Bay Weed Management Plan prepared by USFWS (USFWS 2013), describes the weed control process throughout the system. As stated in Section 2.13.3, staff would review and implement the 2009 Cargill Weed Management Plan and the 2013 USFWS Weed Management Plan as well as receive annual training. In addition, because a portion of the area used for salt production is owned by USFWS, Cargill coordinates closely with USFWS's efforts to control invasive weeds within the Refuge.

The 2009 Weed Management Plan addresses four species of weeds of concern that threaten salt marsh habitats and surrounding areas. Washing of equipment prior to use on the berms, identification of areas where weeds are considered to be high priority by the agencies, and actions by employees to remove invasives if they do become established are part of the weed management plan. The general practice for weed management within an active area of maintenance would be to identify a weed with pocket "weed identification" cards, and, depending on the specific type of work location, either notify a supervisor of areas of weed infestation or address the infestation by using native material to bury the weeds, or removing and disposing of the weeds within the berms and notifying a supervisor of completion.

When target weeds are identified in areas where excavation is occurring, the excavator operator would remove and dispose of or bury the weeds in accordance with the most effective control method for that specific type of weed. For example, Spartina alterniflora (invasive non-native cord grass) would be placed on top of a berm to take it out of the intertidal zone in which is grows and then covered with sufficient soil to prevent seed dispersal or disturbance of the weeds. Other weeds would be covered with at least one foot of excavated sediment and incorporated into the berm.

Note:
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Figure 2-7
Vinyl Sheet Pile Test Locations
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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During grading or scraping operations on the tops of berms, operators would remove weeds of concern from areas where grading is occurring. For invasive weeds discovered near infrastructure such as pumps and platforms, operators would notify their supervisor of the discovery, and the supervisor will determine the most appropriate control methods, such as hand or mechanical removal.

Based on a review of the effectiveness of its BMPs, weed management at lock access locations has generally not been a concern. The sediment/soil deposit areas as well as the access cuts areas were observed to be revegetating following temporary disturbance. In fact, revegetated stockpiles were generally covered by pickleweed. Field inspections and vegetation signatures visible in aerial imagery suggested that among the species colonizing temporarily disturbed areas, invasive species such as perennial pepperweed (*Lepidium latifolia*) were absent and/or not problematic. Invasive species control BMPs were generally unnecessary at locks (WRA 2016).

2.10.2 Lock Access/Egress

A lock is a small pond, typically less than 1 acre in size, surrounded by a berm. Locks are located adjacent to outboard pond berms within areas surrounded by salt marsh. Use of locks is required periodically to allow equipment to enter salt ponds for maintenance. Locks allow the passage of a barge and other floating equipment from the Bay or adjacent sloughs into a pond and out again. The locks prevent saline pond brines from escaping during access and provide storm and high-water protection for the small portion of the salt pond berm that will be removed and replaced on each access or exit. Although locks are used infrequently, they are still subject to the natural processes of subsidence and erosion and must be maintained as long as they are needed to provide access to the salt pond system. Figure 2-1 provides the locations of the 14 locks that may be utilized over the next 10 years.

From 1952 until 2016, Cargill utilized the excavation vessel “Mallard” to maintain the pond berms when using land-based equipment was not feasible. The Mallard has been decommissioned. In the future, Cargill would hire a contractor to utilize a barge-mounted or amphibious excavator for any lock access or egress. Amphibious excavators could also “walk” over the lock berms to enter the salt ponds, or could enter the salt ponds from the land side.

Locks are accessed on a rotating schedule approximately every 2 to 15 years, depending on the maintenance needs of the berm system. An average of approximately two locks per year could be accessed over the next 10 years. In some cases, some locks may be accessed twice during the 10-year period while others may be accessed only once or not at all (one lock access is defined as one entry plus one exit through the same or another lock).

All access and egress activities will be consistent with the BMPs provided in Section 2.13, as well as applicable permit conditions. This will ensure that potential effects on sensitive species and habitat are minimized.

Figure 2-8 provides a plan view of the components of the process of accessing a lock. The lock access and egress process consists of the following steps:

1. Working during a high tide, an excavator would dig an access channel about 40 to 50 feet wide through salt marsh vegetation and/or mudflats from a slough to the outboard side of the lock berm and cut an opening into the outboard lock berm.

2. For the portion of the access channel where the lock berm is within reach of the excavator, the excavator would place the material on the berm. For any remaining portion of the access channel, the excavated material would be sidecast onto a pre-approved stockpile area near the access cut.

3. To enter the lock, the excavator would then remove approximately 200 to 400 CY of the outboard lock berm and place the material in a designated stockpile area on the top of berm adjacent to the access location and then enter the lock through the opening.

4. Once the excavator is within the lock, dry stockpile material from past lock entries would be placed in the berm cut area to reseal the outboard lock berm to enclose the lock.

5. The excavator would then remove sediment that has accumulated within the lock. A maximum of 2,000 CY of sediment within the lock basin would be placed on the inside and top of the lock berms, on a nearby salt pond berm, or into a nearby salt pond.

6. Once the inside of the lock has been "cleaned," the excavator would cut an opening into the adjacent salt pond to allow the excavator barge to enter the salt pond. The excavator would remove approximately 400 to 1,000 CY of material and place it on the inside and top of the lock berms, on a nearby salt pond berm, or into a nearby salt pond.

7. Once the excavator has entered the salt pond, it would seal the opening in the lock berm using salt pond material and/or previously stockpiled material.

   Re-useable sheet piles may be placed on the outboard side of a lock to expedite consolidation of material used to seal the access cut, which in turn expedites revegetation in the vicinity of the cut. The sheet pile would be placed at the mouth of the access cut to the lock. Then material would be placed behind the sheet pile so that highly saturated material that was removed from the access cut would be contained. The inert sheets would remain in place while the sediment consolidates and integrates with the adjacent marsh. The sheets would remain in place until they are needed at another site to help seal another lock. As noted in past Work Plans and Completion Reports, Cargill has used both fiberglass and vinyl sheet piles to seal access cuts.

8. To exit through a lock, the previous steps are reversed. In addition, upon exiting the lock, a small pipe (culvert) may be placed into the outboard lock berm cut to allow tidal water levels to equilibrate between the lock and the Bay.

9. Material placed in the temporary placement areas along the access cut would then be used to fill the access cut so that pre-existing marsh elevations are restored.

Legend

Access Cut

Stockpile

Note:
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0 25 50
Feet

Figure 2-8
Example of Lock Access/Exit Process Components
Cargill, Incorporated
Alameda and San Mateo County, CA

Jacobs

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2.10.3 Materials Stockpiles

Ongoing maintenance requires temporary storage of shoreline protection materials at specific, approved, dry land locations. The proposed Project includes the continued practice of using existing stockpile locations (Figure 2-1) as well as identified stockpile areas around the locks (Figure 2-8). Stockpiled material would be used to maintain the berms throughout the Project site. Stockpile locations are re-used; thus, any disturbance occurs generally in the same area. Cargill requires the supplier of imported fill material to meet several specifications for material to be accepted for use. Appendix C contains the Cargill Clean Import Fill Request Form as of 2021. The following guidance from multiple agencies is utilized as applicable based on the source, type, and intended use location of imported fill:

1. The RWQCB soil chemistry threshold for reuse of soil in aquatic environments (RWQCB 2006)
2. DTSC clean import fill material guidelines (DTSC 2001)
3. RWQCB Environmental Screening Levels (RWQCB 2019)

Applicable criteria are determined prior to import of any material.

Excess excavated material initially placed on pond berms would either be placed in approved dry land stockpiles or used to re-establish the lock berm or salt pond berms. Excavated materials would typically be placed on the tops of existing berms to ensure integrity and stabilize berms.

2.10.3.1 Riprap

All riprap loads have to be inspected to ensure that they meet the following criteria:

- Maximum size for individual pieces: 3 feet wide x 3 feet long x 18 inches thick (14 cubic feet)
- Minimum size for individual pieces: 1 foot wide x 1 foot long x 3 inches thick (0.25 cubic feet)
- Soil and gravel can comprise no more than 10 percent of the riprap load.
- There cannot be any exposed rebar and/or hogwire.
- Any wire must be cut flush in order for the riprap to be used.

2.10.3.2 Soil

- Soil must be free of debris (wood, metal, filter fabric, garbage/trash, etc.).
- Imported soil (i.e., soil not originating within areas owned or controlled by Cargill) must be reviewed and approved in advance by the Environmental Manager designated by Cargill.
- The soil volume used must be documented in the daily log and monthly reports.
- The linear feet or square footage of the area being repaired must also be documented in the daily log and monthly reports.

2.10.4 Sediment Removal from Intake Structures

Over time, sediment accumulates around intake structures and along intake channels. Bay water contains sediment that settles out when the velocity of the water slows on the pond side of the intake. Natural morphological processes, as well as human activities such as flood control channel maintenance and invasive weed eradication, can also lead to sediment accumulation on the bayward/slough side of the intakes. During much of year (i.e., when no water is being taken in), conditions near the slough side of the intakes are relatively quiescent allowing sediment to accumulate. Over time, sediment accumulation on either side of the intakes can limit or even block the flow through the intakes. Due to the location and operation of the intake structures access is difficult for traditional sediment removal equipment (dredge, barges, and cranes).

For this Project, Cargill would typically remove the accumulated sediment on the outboard side of the intakes manually. Divers using 4 to 6-inch hoses and low velocity pumps would carefully suction sediment from around the intake. Removing the sediment in this way would minimize potential turbidity from operations. In addition, because a diver is directing the head of the hose this method provides precision in movement and enables the divers to avoid any visible fish/biota. The diver would submerge the end of the hose into the sediment before engaging the pump and would keep it submerged whenever the suction pump is in operation (disengaging the pump when the hose has to be repositioned), which would further reduce the exposure of fish to entrainment.

The pumps would be located on top of the berm or on the intake platform, and would be provided with a sufficient length of hose for divers to access sediment blocking the intake on the outboard side of the berms. The suctioned sediment and water would be pumped into a screened area within the salt pond. Once all the sediment has been removed and settled within the screened area an excavator would be used to remove the fine material and place it in trucks for transport to a reuse location or disposal facility. Alternate methods would include using a hydraulic suction hose similar to that proposed but mounted from a small skiff or low profile/draft barge. Sediment would be transferred in the same fashion to the adjacent screened area within the salt pond.

If the sediment removal methods cited are not feasible or cannot achieve the necessary removal of sediment, Cargill would use mechanical amphibious equipment such as amphibious excavators. In this case, the excavator would be accompanied by a low-draft barge into which the excavator would load the sediment. A suction hose would then be used to transfer the sediment from the container barge to the adjacent screened area within the salt pond. Both hydraulic suction and mechanical removal are more protective of the environment than use of the dredge vessel Mallard, which was the process used previously when sediment removal was required at the intakes.

Sediment removal for each intake would typically be required every 3 to 5 years. Cargill estimates that the amount of sediment requiring removal at any one time would range from less than 30 CY up to approximately 1,800 CY, depending on the intake location and specific structure. The total volume that would require removal during the anticipated 10-year permit period is estimated to be approximately 12,000 CY.

An alternative sediment management method would be to pump the sediment into a filter box stationed on top of the berm. The filter box would be positioned adjacent to where sediment removal is occurring and would be used to collect and temporarily contain the sediment and water. Time would be allotted to allow the sediment to settle within the filter box and then the overlying decant water would be discharged to the salt pond. The remaining sediment within the filter box would be reused or disposed of as described above.

Sediment removal activities on the bayward/slough side of any intake structure would occur during periods when listed species are anticipated to be less likely to be present. Section 3.4 provides detail on environmental work windows for various species.

Intake channels also require maintenance. Maintenance of intake channels may include vegetation and debris removal as well as sediment removal. Vegetation and debris removal may require use of heavy equipment on mats.

While sediment removal activities have occurred in the past, there has been no need for sediment removal during the baseline period, and sediment removal activities are therefore considered "new" activities for the purposes of the EA. Historically, Cargill used the dredge vessel Mallard to remove sediment from in front of the intakes and intake channels. Because the Mallard has been retired, and to reduce potential impacts on the environment, Cargill is proposing the sediment removal method described above.

2.10.5 Other Infrastructure Maintenance

Cargill also must maintain numerous other infrastructure components that support the salt production system. Over time these components break down and require either repair or replacement. These structures would be maintained on an as needed basis to ensure the overall function of the structure will be in good working order to support the system. Any maintenance activity conducted would follow established BMPs (Section 2.13) and would only use the minimum fill necessary.

The following list describes various components that may be repaired, replaced, or serviced on an annual basis.

A. Maintenance and repair of brine channels and internal donuts to maintain design capacity and elevations

B. Repair and replacement, and in some instances relocation, of existing structures and related facilities (such as motors, pumps, gates, pipelines, and culverts) as well as existing bridges, bridge foundations and abutments within the network of salt pond berms

C. Maintenance and repair of wooden trash racks

D. Repair and replacement of other existing infrastructure, such as existing or temporary fences, vehicle gates, electrical distribution lines for service operations, crystallizer access ramps, and pumping donuts and cofferdams

E. Repair and replacement of siphons in non-tidal areas and of siphons that cross salt marsh, sloughs and channels

F. Removal of algae from ponds

G. Minor fill and excavation

- Minor excavation to provide access to repair and replace facilities, and to make berms maintainable with heavy equipment
- Other minor fill or excavation in the Bay in managed wetlands and in salt ponds for purposes consistent with (1) berm maintenance; (2) access to salt ponds; (3) use of locks; (4) salt making; (5) the placement of pipes, siphons, power, or tidal control structures; and (6) the prevention of erosion and repairs related to storm damage, including clearing of sediment that blocks pumps or gates.

H. Modification of internal flow paths

These tasks are described briefly in the subsections that follow.

2.10.5.1 Brine Channels and Internal Donuts

Additional brine conveyance occurs through multiple brine channels adjacent to ponds throughout the salt system. These channels are the primary method of conveyance of brine through the system and must be maintained to ensure proper function. Maintaining correct channel slopes is crucial because flow in the salt-making system is largely gravity driven. Salt solids may precipitate out into the brine channels when brines are moved between ponds. Accumulated salts are removed by flushing the brine channel with Bay water or lower salinity brines; and moving the flushed water or brine into a nearby salt pond.

Removal of accumulated sediment from the brine channels occurs between every 5-10 years and involves removal of the sediment with an excavator. Material within the ditches is predominantly silty with high water content. The excavator would transfer sediment from within the ditch to the adjacent inboard side of the salt pond. This material can be used for maintenance of the salt pond berms or could potentially later be transferred with an excavator to a truck for transport to other areas where maintenance is needed. Cargill estimates that the amount of sediment requiring removal at any one time would range from less than 5,000 CY up to approximately 10,000 CY, depending on the extent of linear feet being maintained within each ditch. The estimated total volume anticipated over the next 10-year period is approximately 60,000 CY of sediment removed from ditches within the system, consistent with the average rate of removal during the past 12 years.

As part of the maintenance of the brine channels, Cargill also maintains the internal donuts by removing accumulated sediment and maintaining the sidewalls of the donuts. Periodically, Cargill constructs new internal donuts as needed to enable it to manage flow between the ponds. Construction of new donuts consists of adding new berms in or adjacent to an existing salt pond or adjacent to an existing brine channel, and then connecting one or more existing brine channels and one or more ponds to the donut via culverts.

2.10.5.2 Existing Structures and Walkways

Existing structures include piers, platforms, trestles and tide gates. Excavated material generated during repair or replacement of existing structures would be placed in an identified upland area unless specified otherwise in the Work Plan. Pile driving may be required for piers and platforms. In soft soils, piles could be driven by pushing them into the ground. In denser soils, a vibratory pile driver may be required.

- Piers: Pier sizes range from small supports that provide access to a depth gauge to large diameter wood, concrete, or steel supports for pump platforms and pump houses. Small piers can be removed with small heavy equipment and replaced with either a pile driver or small heavy equipment. The specific equipment used will depend on equipment reach and how far the pier extends from a berm or access point. Large piers require large heavy equipment working on matting and a crane.
- Platforms: Platforms are repaired from either the top of the platform or from below. If the platform is over brine or water, then workers use small boat(s). Typically the wood and metal components are replaced as pieces show signs of failure. Platform repairs are typically accomplished using manual, battery powered, and/or air driven tools.
- Trestles: A trestle is a framework used to support a platform or elevated structure. Trestles are installed similarly to piers and can be permanent supports to pipelines, decking, walkways, platforms, pump structures, etc. They can also be temporary supports for cranes, heavy equipment, scaffolding, etc.
- Tide gates: Tide gates consist of two gates: a lift/gear/tide gate and a flap gate. Supporting structures are driven into the soil with heavy equipment and built up around the berms to prevent erosion and undermining. Some excavation and replacement of soil is required to place the supporting structures. Heavy equipment, such as an excavator, is required to lift and drive the supporting structure and hang the gates.
- Bridges, bridge foundations and abutments: Bridges in the salt production areas span culverts and pipes that connect the ponds. When these pipes or culverts need repair, the bridges may have to be removed to allow access. Following repair of the pipe or culvert, the bridge is reconstructed using wood, concrete, or clean soil material, as needed. Bridge foundation repairs may require minor excavation to access footings.
- Walkways: Cargill maintains walkways made of soil, gravel, and salt. Cargill uses heavy equipment to maintain the walking surfaces by repairing pitting, erosion, rutting, etc. Typically a thin layer of material is placed on the walkway, graded, watered to achieve the proper moisture content, and then compacted.

2.10.5.3 Trash Racks

Trash racks are installed on the outboard sides of berms at some of the pumps/intake structures to prevent debris from entering the pump/intake. The trash racks require periodic maintenance and repairs. Maintenance would include removing accumulated debris, typically using hand tools. Typical repairs would require access by boat or placement of matting for workers to reach the trash rack. Repairs would include use of manual, battery powered, or pneumatic tools. Repairs may involve use of heavy equipment if the pieces being replaced are heavy or awkward to handle.

2.10.5.4 Perimeter Fences

Perimeter fences provide security to keep the public out of designated areas. Most fences are built of posts as supports and a barrier such as chain-link. Post holes are dug with equipment such as a post-hole digger, mini excavator, or manual tools. Materials such as soil, sand, gravel, or concrete are used to set the posts.

2.10.5.5 Retaining Fences

Retaining fences are wooden supporting structures that act similar to a retaining wall or barrier. They are found in ponds, crystallizers, and brine ditches. Retaining fences consist of large wooden posts and laths attached to the posts with connections such as lag bolts or screws. The posts are driven into the ground with heavy equipment such as an excavator. Lath joints are fully glued to prevent leaking due to hydrostatic pressure. Trenches are dug so the laths begin below the final ground level; then the trenches are backfilled and compacted to prevent undermining. Fences exposed to higher horizontal pressures have angled structural wooden braces attached to each post to prevent rotation of the fence. Repair or replacement of a retaining fence involves the use of heavy equipment such as an excavator.

2.10.5.6 Vehicle Gates

Gates can be made of many materials, including wood or metal, and can have many designs. Vehicle gates can be manually-operated or powered. All gates require supports. Repair of vehicle gates may require placement of supports, which is similar to installing fence posts.

2.10.5.7 Crystallizer Access Ramps

To access crystallizers, ramps are made of rock, salt, and a drain pipe. Some ramps are temporary, built before harvest and removed after all harvest activities are complete. Cargill also maintains some permanent ramps. These ramps require repairs due to erosion from rain runoff and wave impacts. Repairs include replacing the drain pipe at the toe of the ramp, resalting the top surface, and grading and compacting the ramps as needed.

2.10.5.8 Electrical Distribution Lines

Pumps and some other types of equipment require electrical power. The majority of the lines used to support salt-making operations are high voltage lines. The lines connect to transformers that step down the voltage. The transformers feed power to equipment such as pumps or lights. The lines and other transformers need to be replaced or upgraded over time. Some lines may need to be buried or raised for safety reasons.

Above-ground power lines are supported by large wooden poles that are partially buried into the ground. Power poles are typically driven in with heavy equipment. Transformers are either located on concrete pads on the ground, are supported on an elevated structure, or are attached to the power pole.

2.10.5.9 Pumping Donuts and Internal Coffer Dams

Pumping donuts are small ponds with berms, similar to locks. Pumping donuts have tidal gates that collect Bay water. The Bay water is then pumped from within the donut to large pumps and is used in the packing of the large pumps. The Bay water is also used to flush precipitated salt from larger pumps to prevent cavitation. Coffer dams are temporary structures used to isolate gates, sections of ponds, pumps, etc. They can be made of soil, salt, sand bags, gravel bags, or other materials.

2.10.5.10 Siphons

Siphon repairs may include clearing the siphons of accumulated salts and sleeving the siphon to support its structural integrity. Cargill may also need to remove accumulated sediment in front of the inlet and outlet of siphons. Excavated sediment would be placed on top of internal berms or into salt ponds. Siphons in non-tidal areas would typically be replaced by first constructing coffer dams to minimize water entry into the work area, and then excavating and replacing the siphon. Replacement siphons that cross salt marsh, sloughs and channels would typically be installed using directional drilling to minimize effects on the environment. Directional drilling could also be used to replace siphons in non-tidal areas.

2.10.5.11 Removal of Algae from Ponds

Cargill uses booms to control algae within the ponds. The collected algae have to be removed periodically. Cargill typically uses airboats and a floating harvester to collect the algae. Land-based equipment (such as excavators and haul trucks) is used to dry the algae and haul off the dried algae.

2.10.5.12 Minor Fill and Excavation

Not all required repairs and maintenance activities can be predicted in advance. Other minor fill and excavation would continue to be needed periodically, as has been the case under the current permit. Any such activities would be described in the Annual Work Plan (refer to Section 2.10.6).

2.10.5.13 Modification of Internal Flow Patterns

In certain locations, Cargill needs to change the mechanism for transferring the contents of one pond to another. Some interior berms currently have gaps for brine flow between ponds. When Cargill improves berms to make them drivable as part of the proposed Project, the gaps would be filled and fitted with pipes to maintain flow between ponds. Cargill also regularly adjusts the brine levels in the ponds as part of its existing operations. For example, brine levels are adjusted before the rainy season in anticipation of increased precipitation, and to manage pond levels so erosion is controlled inside the pond. Brine levels also change in response to annual rainfall and evaporation.

2.10.6 Work Plan Development

Cargill develops and submits an annual Work Plan to BCDC, RWQCB, CDFW, NMFS, USACE, USFWS, and USEPA that describes the anticipated work that may be conducted. The Work Plan is submitted for evaluation and approval. Through the Work Plan process, which would also be implemented for the proposed Project, resource and regulatory agencies maintain on-going control of the scope of the maintenance and designed operational activities on a yearly basis, within the conditions of the final permit, in accordance with the scope of the proposed Project and proposed BMPs as reflected in the environmental analysis of this EA. The Work Plan process provides needed inter-annual flexibility in the amount of specific types of maintenance conducted, while ensuring regulatory and resource agency management of the level of activities consistent with governing laws and policies applicable at the time that the Project is authorized.

Work amounts proposed for any given year would be variable, and the impact assessment in this EA is based on calculated average of work to be undertaken in any given year. The requirement to submit an annual Work Plan to the regulatory agencies before work is undertaken in any given year ensures that the specific work for any given year will be consistent with the impact evaluation conducted in this EA, while maintaining needed flexibility to adjust maintenance activities in response to weather and other factors. The Work Plan would also serve as a review vehicle for any proposed changes in maintenance methods consistent with the parameters of performance criteria to be established by the governing BCDC permit, as discussed. For example, as noted earlier, Cargill has retired the dredge vessel Mallard, and now relies on other equipment to access locks.

To provide for better planning, Cargill implements annual monitoring. Monitoring can be conducted by helicopter or drone or other method between December and January when king tides typically occur. Monitors seek to identify any low spots or indications of erosion. Itemization and prioritization of these observations provides the basis for developing the annual Work Plan. In addition, Cargill staff inspect berms and ponds on a regular basis to assist in identifying any debris removal or preventive maintenance needs.

2.10.7 Supplemental Maintenance Work Not Included in the Work Plan (Unanticipated Work)

It is likely that at some time during any given year, Cargill would need to conduct maintenance work not reflected in the Work Plan, but that falls under the purview of the permit. The need for such unanticipated work may be driven by damage caused by events such as:

- Severe weather and flooding related events.
- Various types of large debris colliding with a berm

In addition, new opportunities for improving maintenance and operations efficiencies may arise. Cargill would continue to evaluate new maintenance approaches that could potentially reduce overall environmental impacts while still ensuring the integrity and safety of the berms/system for operation and maintenance in the future. This evaluation process may include assessing new methods and technology that could improve future practices. Any such assessments would be implemented using applicable BMPs (presented in Section 2.13) and may be authorized through Annual Work Plan submittals if the new methods and technologies are in accordance with the scope of the proposed Project and proposed BMPs as reflected in this EA and within the parameters of performance criteria to be established by the governing BCDC permit.

Before performing any unanticipated work, staff would notify and be required to receive approval from Cargill's Environmental Manager. Cargill would typically submit a notification to the USACE, RWQCB and BCDC, which would include a description of the proposed unanticipated work and appropriate BMPs that would be utilized. Cargill anticipates that the agencies would respond in writing within 30 days regarding their approval of any requested modifications, and Cargill would then conduct the unanticipated work.

An exception to waiting for approval before conducting unanticipated work would be when the need arises to prepare for a storm event or other events that could jeopardize the integrity of the berms. Cargill would submit a request as for all types of unanticipated work, but due to the need to respond in an expeditious manner, maintenance activities would be performed before approvals could be received. As an example, preparation for storm events could entail placing additional material such as sand bags or imported material on top of berms or on top of the slope of berms in locations where wind/wave impacts from the storm could occur. Any such emergency work would be documented as part of the Completion Reports.

2.10.8 Summary of Proposed Changes in Maintenance and Operations Activities

In general, activities that would be undertaken pursuant to the proposed Project would be similar in nature and extent to the maintenance and operations activities carried out under the current permit (i.e., a continuation of current activities). Cargill anticipates some limited changes in the level of activities, as follows:

- Berm core compaction: Reduction from approximately 4 miles over a 10-year period to 2 miles over a 10-year period.
- Lock access: Increase from approximately one event per year to up to four events per year.
- Maintenance of drivable berms: As more berms are made drivable, increased maintenance of drivable berms is required. The average amount of maintenance is anticipated to increase from an average of 33 miles per year to an average of 38.5 miles per year over the proposed 10-year Project term.
- Repair of structures: Increase from approximately one major repair per year to a total of up to 12 major and minor repairs per year.

In addition, Cargill anticipates the implementation of four new activities, three of which are related to sea level rise adaptation. These activities would be:

- Raising select berms (up to approximately 12 inches) in anticipation of SLR, requiring an estimated 9,600 CY of imported material per year.
- Conducting a study of the use of vinyl sheet pile for possible future (beyond the 10-year term for the proposed Project) SLR adaptation efforts.
- Installing up to about 1,000 linear feet of vinyl sheet pile per year, should the study prove successful.

- Removing sediment from in front of intakes using a new methodology, requiring an estimated 1,000 CY of sediment to be removed from the Project area.

As noted earlier, Cargill also proposes to modify its maintenance methods and implement methods that reduce the potential for impacts to the environment, increase efficiency, and/or address effects of climate change. Alternative or new methods proposed would be proposed and approved as part of the annual Work Plan process described in Section 2.10.6 to the extent that the new methods and technologies satisfy the authorizations and conditions in the governing BCDC permit in reliance on the environmental analysis of this EA. More specifically, to the degree that these alternative methods are very similar to existing methods, or the result of new technology improving equipment and materials that would result in otherwise similar impacts to the authorized methods, impacts associated with implementation of these alternative methods would be expected to be equivalent to or less than those associated with the current maintenance methods being analyzed in this EA.

2.11 EQUIPMENT

Cargill continually evaluates new technologies and equipment to improve and increase efficiency of maintenance activities. Currently, the landside equipment for maintenance is likely to include, but is not limited to:

- Dump trucks with 5 to 10 CY capacity
- Haul trucks with 20- to 40-ton capacity
- Water trucks for dust control
- Backhoes
- Excavators
- Bulldozers
- Graders
- Sheep's foot compactors (to consolidate material where repairs have been made)
- Front end loaders
- Tractors with attachments for vegetation control
- Tracked low-ground-pressure vehicles
- Cranes
- Trenching equipment

Water-borne equipment may include, but is not limited to:

- Barge-mounted excavators
- Barges
- Amphibious excavators
- Mats
- Small aluminum or fiberglass boats powered by small motors
- Air boat and amphibious harvester
- Diver-assisted suction hoses and pumps
- Framed silt curtains

The amount and specific types of equipment to be used for each maintenance activity would depend on the specific activity, and the extent of the activity.

2.12 MAINTENANCE SCHEDULE AND STAGING

2.12.1 Maintenance Schedule

Maintenance activities may occur at any time of year, but would preferentially be scheduled to occur during work windows for sensitive species (as discussed in Section 3.4) potentially present in a specific work area. All applicable avoidance and minimization measures and BMPs would be employed for each maintenance episode. All work would be conducted in accordance with biological opinions and permits issued for the proposed Project (including applicable BMPs).

2.12.2 Noise and Glare Control

With the possible exception of emergency work, maintenance activities would typically occur during the day time. The Project would also avoid nighttime lights as much as possible except when necessary to support nighttime and early morning work (such as salt harvest and salt reclaiming activities). Any required lights would be oriented to minimize glare to adjacent land uses, especially residences and sensitive habitat.

2.12.3 Staging

Temporary staging areas for maintenance work would be located along the tops of berms near the work area, if needed and feasible. Any necessary staging areas would generally be designed to allow traffic and recreational access to move past the staging locations. If there are no suitable staging locations in the vicinity of the work area, staging may also occur at upland locations inland of the salt ponds. The needed equipment would access the maintenance areas via the roadways on the tops of berms, or from the water side (for locks), as described in Section 2.10.2.

All stockpiles would be managed in accordance with the BMPs (Section 2.13). Following completion of maintenance work within a given area, all remaining materials would be removed from the staging area and any remaining excess soil or debris would be removed.

2.12.4 Water Management

Precipitation which falls within the system is not discharged to surrounding water bodies. However, if necessary during extreme storm events, if there are high pond water levels coupled with high rainfall, controlled discharge through pumps and/or gravity drains may be directed into the Alameda Flood Control Channel in Alameda Creek and into Mowry Slough. This process is conducted in accordance with the current approved Storm Water Pollution Prevention Plan (SWPPP) and in coordination with RWQCB authorization. During the past 5 years, Cargill has had one such event. If it becomes necessary to move rainwater from off the top of the higher salinity ponds, the rainwater is first moved to the least saline ponds before being discharged. No discharge occurs from high salinity ponds. During the most recent event, the excess rainwater was discharged from two low-salinity ponds in Newark. Any water generated from dewatering during maintenance activities is retained within the salt ponds.

2.12.5 Traffic Control

Maintenance activities may require delivering heavy equipment and materials to specific work areas, as well as potentially removing excess soil and other materials, such as trash, from the work areas. To ensure that the public is protected, that trucks are moved efficiently in and out of the work area, and that traffic congestion both on the berms and on nearby surface streets is minimized, contractors would in some cases be required to prepare a Traffic Management Plan (TMP). A TMP would be required if substantial numbers of dump trucks or other heavy equipment would need to enter public roadways to access the work location(s) or to remove materials from the work location. A TMP would also be required if access to a work location involves routine heavy equipment access or numerous truck trips via a berm that receives frequent public use. The TMP would address how trucks and other equipment would be moved into the work area, any required safety measures such as signs and flaggers, and any necessary lane or road closures. Any closures of public roads would have to be permitted, and closures of any berms to established recreational access would be coordinated with USFWS or East Bay Regional Park District, which manages Coyote Hills Park.

2.13 BEST MANAGEMENT PRACTICES FOR MAINTENANCE WORK

In coordination with the resource agencies BMPs have been refined since the last permitting period. The BMPs developed during the last permitting period have proven effective (as documented in Section 2.13.7), and the refined BMPs presented herein are anticipated to further enhance protection of sensitive resources.

To avoid and/or minimize potential impacts to jurisdictional waters, water quality, and biological resources, the BMPs presented in the following subsections would be implemented by the Project. These measures would be subject to modification and additions based upon regulatory and resource agency review, and Cargill would implement BMPs in accordance with the requirements of these agencies. The proposed BMPs address specific maintenance activities, as well as protection of endangered species and sensitive natural resources (ES and SNR). Measures for the protection of ES and SNR may be applicable to any maintenance activity, depending on its location and the time of year during which it is conducted. All relevant work windows would be adhered to in accordance with resource agency requirements.

2.13.1 Berm Maintenance

- **Berm Maintenance–1: Choker Berm.** Build choker berms on the outboard side of the tops of berms abutting the Bay.
- **Berm Maintenance–2: Berm Slope.** Slope outboard berm tops inward toward the salt pond when viable.
- **Berm Maintenance–3: Spills.** If spillage occurs onto the marsh plain, staff will notify the Supervisor and Environmental Manager. Spillage will be removed unless it is deemed by

consulting experts that the spillage removal would create more impacts than leaving the material in place.

- **Berm Maintenance–4: Berm Work.** Perform berm work, where possible, from land-based equipment on the tops of berms to avoid or minimize the use of locks.
- **Berm Maintenance–5: Excess Material.** Place any material in excess of what will be needed to top a berm, be stockpiled, or provide access cut backfill, in the salt pond.
- **Berm Maintenance–6: High Tides.** During high tides (greater than +6.9 feet National Geodetic Vertical Datum at the Golden Gate Bridge) minimize activities along outboard berms.
- **Berm Maintenance–7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance.** The typical 700-foot buffer for CRR would preclude accessing berms for maintenance during much of the year if a CRR were to be nesting in many areas of the marsh habitat outboard of the outboard berms. Thus, it may infeasible for Cargill to strictly follow this general guideline in the case of emergency berm maintenance, which is defined as berm maintenance that is required to avoid a serious threat to wildlife habitat and/or human health. During emergency berm maintenance Cargill will avoid, to the extent practical, creating disturbances adjacent to tidal marsh habitat. This includes removing vegetation when necessary and working as quickly as possible.
- **Berm Maintenance–8: Dust, Light, and Noise.** To the extent practicable minimize dust, light, and noise levels when working near or on outboard berms near vegetated marsh.
- **Berm Maintenance–9: Material.** For maintenance of the tops of berms, use only clean imported material (as defined in Section 2.10.3) or, if suitable, native borrow material.
- **Berm Maintenance–10: Vehicular Traffic.** Confine vehicular traffic to berm roads that have been graded or have been maintained for all weather traffic. Vehicles driving on berms, depending on the area and conditions, shall not exceed 35 mph.
- **Berm Maintenance-11: Notification of Mosquito Abatement District**. Coordinate with Alameda County Mosquito Abatement District or San Mateo County Mosquito and Vector Control District, as applicable, regarding planned work on berms.

2.13.2 Riprap Placement

- **Riprap Placement–1: Riprap Amount.** The minimum amount of riprap necessary will be placed to protect the existing berm.
- **Riprap Placement–2: Minimize Voids.** The number of voids amidst riprap will be minimized to limit habitat opportunities for predators and nonnative species.
- **Riprap Placement–3: Riprap Placement.** Riprap will only be placed in areas generally free of marsh vegetation.
- **Riprap Placement–4: Erosion.** In areas of high erosion, geotextile fabric and soil fill will be placed first to support overlying riprap.

- **Riprap Placement–5: Agency Notification.** Before placement of riprap occurs, all pertinent agencies will be notified.

2.13.3 Weed Management

- **Weed Management–1: Weed Management Plan.** Implement procedures described in the 2009 Cargill Weed Management Plan, as modified by the 2013 South San Francisco Bay Weed Management Plan (USFWS 2013).
- **Weed Management–2: Weed Identification Cards.** Staff will be provided with pocket "weed identification" cards that will be kept in vehicles.
- **Weed Management–3: Weed Infestation.** Staff will notify supervisors of areas of weed infestation.
- **Weed Management–4: Clean Equipment.** All earthmoving equipment will be cleaned prior to going to a new location for maintenance.
- **Weed Management–5: Invasive Cordgrass.** Cargill will coordinate management of invasive cordgrass with the Invasive Spartina Project.[4]
- **Weed Management–6: Weed Management on USFWS Property.** Cargill will coordinate with USFWS regarding invasive weed management on USFWS-owned property.

2.13.4 Lock Access/Egress

- **Lock Access/Egress–1: Environmentally Sensitive Areas Identified in Work Plan.** Areas of high environmental sensitivity in each lock and pond complex will be identified and described in the annual Work Plan. Options for temporary placement of sidecast material will be proposed in the Work Plan.
- **Lock Access/Egress–2: CRR Surveys.** In areas where California Ridgway's rail have the potential to nest, protocol-level CRR surveys will be conducted between February 1 and April 15 in the year of planned lock access and egress. Current survey protocol requires a minimum of four surveys completed within this period, and this BMP includes an allowance to follow an updated procedure if the formal protocol is modified by USFWS. If surveys do not find nesting rails within 700 feet of the lock, lock access and egress may occur upon acceptance of the survey results by the USFWS. If nesting rails are observed within 700 feet of a lock access point, lock access and egress will be delayed until the period between September 1 and January 31, as specified in the USFWS BO (USFWS 2012b). If no protocol-level surveys were conducted for an area of lock access and egress in the spring of a given year, work in tidal marsh in that year will be initiated after September 1 of that year and be completed prior to February 1 of the following year.
- **Lock Access/Egress–3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion.** If lock access and egress will impact the outboard marsh, marsh vegetation

[4] The San Francisco Estuary Invasive Spartina Project is a coordinated regional effort among local, state and federal organizations dedicated to preserving California's coastal biological resources through the elimination of introduced species of Spartina (cordgrass).

within the area will first be removed using hand tools (e.g., weed-whackers) in the presence of a qualified biologist. The biologist will inspect the vegetation for salt marsh harvest mouse nests prior to removal and monitor the careful removal of vegetation to assist in the avoidance of individual mice. After the area has been inspected for mouse nests, the vegetation immediately ahead of the hand tool removal will be agitated (e.g., depressed with a push broom) to flush any adult mice potentially in the work area, and then will be immediately and carefully removed down to bare ground or stubble. Cut vegetation will be removed from the work area to eliminate onsite cover for mice. Removal of vegetation is not required if the vegetation is fully submerged at the time of disturbance because the SMHM is not present in submerged vegetation.

- **Lock Access/Egress–4: SMHM 100-Foot Buffer.** If a SMHM or its nest is observed, no work will occur within 100 feet of the observation until the mouse moves away of its own volition, or the USFWS is contacted and gives approval to proceed. The mouse will not be harassed or moved out of the way.
- **Lock Access/Egress–5: Seal Pupping 500-Foot Buffer.** Work activities will maintain a 500-foot buffer at active seal pupping locations such as Mowry Slough, unless the buffer is decreased with specific concurrence from NMFS.
- **Lock Access/Egress–6: High Marsh Preservation.** Work will preserve high marsh features created at previous lock access events, such as vegetated mounds, to the maximum extent feasible.
- **Lock Access/Egress–7: Excavated Material.** Excavated material will be placed into existing stockpile areas, into locks or salt ponds, or onto berms, to the maximum extent feasible to avoid or minimize side-casting into salt marsh habitat. If sidecasting into tidal marsh is unavoidable, sidecast material will be placed into pre-staked temporary stockpile areas adjacent to the access cut. The material will be returned to the access channel when the excavator exits the lock to restore the pre-access elevations to the degree feasible so salt marsh vegetation can regenerate.
- **Lock Access/Egress–8: Excess Sediment.** Sediment from the lock interior in excess of that required for berm fortification will be placed into the salt pond borrow ditches or on the salt pond berm.
- **Lock Access/Egress–9: Silt Reduction.** Upon exiting a lock, Cargill will place a small pipe in the lock berm or provide another means to equalize hydraulic pressure and to reduce the amount of silt that can accumulate in the lock basin over time.
- **Lock Access/Egress–10: Sediment within the Access Cut.** If additional sediment is needed to achieve the optimal elevations for reestablishing vegetation within the access cut, sediment will be removed from the slough channel and placed in the access cut once the barge has exited.
- **Lock Access/Egress–11: Vegetation Recruitment and Monitoring.** Following construction in an outboard marsh, vegetation will be allowed to recruit naturally, and the impact area will

be monitored for non-native plant species invasion. If target non-natives become established, they will be removed according to the Weed Management Plan.

- **Lock Access/Egress–12: Pepperweed Prevention.** Following lock egress, Cargill will take steps to prevent the establishment and growth of perennial pepperweed (*Lepidium latifolia*) on newly topped berms by spraying and/or removing plants by hand during the season immediately following barge egress from the lock corresponding to the berm complex.
- **Lock Access/Egress–13: Evaluation and Modification of BMPs.** Cargill will utilize information gained from implementing BMPs to evaluate and modify the BMPs over the duration of the permit to avoid or lessen impacts to wildlife and wildlife habitat.
- **Lock Access/Egress–14: Emergency Access.** If emergency lock access or egress is required to avoid other adverse environmental effects to tidal marsh areas, and/or for human health or safety reasons, access may proceed regardless of the time of year and survey results. Notification will be provided to the USFWS prior to any emergency access, including the location and reason for the access.

2.13.5 Endangered Species and Sensitive Natural Resources (ES and SNR)

- **ES and SNR–1: Speed Limit.** Vehicles driving on berms near tidal marsh or other listed species habitat will travel at speeds which minimize noise and dust disturbance, depending on the berm conditions.
- **ES and SNR–2: Vehicular Traffic.** Vehicular traffic will be confined to berm roads, designated staging areas, and the proposed Project footprint.
- **ES and SNR–3: Seasonal Work.** Work within suitable CRR breeding habitat outboard of the berms will be completed during the non-nesting season (i.e., from September 1 through January 31) for CRR, if feasible. If it is not feasible to complete work in tidal marsh during non-nesting season, protocol-level CRR surveys will be conducted between February 1 and April 15 in the year of planned outboard maintenance activities.
- **ES and SNR–4: Emergency Access.** If emergency maintenance or repair work is required to avoid other adverse environmental effects to tidal marsh areas, and/or for human health or safety reasons, work may proceed regardless of the time of year and survey results. Notification will be provided to the USFWS and CDFW prior to any emergency access, including the location and reason for the access.
- **ES and SNR–5: Lock Access.** Locks will be accessed at the time of the highest tides of the month, to the degree practical, to minimize excavation of Bay mud and the duration of time at the lock. If CRR and/or SMHM are found to be present based on surveys of the work area, work would be rescheduled to occur between September 1 and January 31.
- **ES and SNR–6: Predator Control.** Cargill will provide funding for predator control on an annual basis, pursuant to the Memorandum of Agreement dated February 1996 between USFWS and Cargill (USFWS and Cargill 1996). (Cargill will continue to cover the expenses of predator control, prorated to the acreage of the current salt system.)

- **ES and SNR–7: Special-Status Species Notification.** Cargill will notify USFWS and CDFW within 24 hours of the finding of any injured or dead CRR, western snowy plover (*Charadrius alexandrinus nivosus*) (WSP) or their eggs, SMHM, or California least tern (*Sternula antillarum browni*) (CLT), associated with Project activities.
- **ES and SNR–8: Nesting Western Snowy Plover Buffer.** Cargill will maintain a 600-foot buffer around nesting WSP.
- **ES and SNR–9: Seal Pupping Buffer.** Cargill will maintain a 500-foot buffer when active seal pupping is occurring at the Mowry Slough pupping site.
- **ES and SNR–10: Endangered Species Observed.** If an endangered species is observed, work will be stopped and staff will note the location and species observed. Staff will be trained to back away safely and inform the supervisor and others to avoid the area. Staff will inform the Environmental Manager or designee who will instruct staff if any additional actions are necessary.
- **ES and SNR–11: SMHM and CRR Habitat Preservation.** To minimize effects to SMHM and CRR from any excavation, fill, or other activities in suitable habitat within tidal marsh areas adjacent to locks, Cargill will not disturb more than 1.16 acres of vegetated area at any one work location over the 10-year permit period.
- **ES and SNR–12: Environmental Training.** Cargill will annually train maintenance staff on protection of SMHM, CRR, CLT, and WSP. This training will be conducted by Refuge biologists, or other qualified wildlife biologists approved by USFWS, and is intended to minimize effects to SMHM, CRR, CLT, and WSP. As part of this training, Cargill will ensure that maintenance staff are familiar with: (1) the description and status of the SMHM, CRR, CLT, and WSP; (2) the importance of their associated habitats; and (3) a list of measures being taken to reduce effects to these species during maintenance activities. A packet describing this information has been prepared and will be made available to all Cargill personnel.
- **ES and SNR–13: Notice about Nesting Activities.** Cargill will release a bulletin to employees, contractors, and consultants when the Refuge or the San Francisco Bay Bird Observatory (SFBBO) provide updates about WSP and CLT nesting activities. The bulletin will provide the approximate location of the nest, as well as applicable road closures or other buffers.
- **ES and SNR–14: Debris Broom.** A debris boom will be deployed during demolition work on outboard structures. Any debris captured by the broom will be collected daily at minimum.
- **ES and SNR–15: Pile Driving.** If pile driving is necessary, it will be completed using either heavy equipment to push the pile into the sediment, or a vibratory driver if necessary.
- **ES and SNR–16: Biological Monitoring of Pile Driving.** A biological monitor will be present during impact pile driving activities to monitor the area for the presence of Pacific harbor seals and California sea lion. If a seal or sea lion is observed within 1,000 feet of impact pile driving activities, pile driving will cease until the individual(s) has left the buffer area.

- **ES and SNR–17: Concrete.** Concrete will be allowed to cure for at least 30 days prior to coming into contact with water within tidal areas. Poured concrete will be completely contained within forms created for construction. If any concrete is accidentally released into tidal areas, it will be removed immediately.
- **ES and SNR–18: Pumping.** The majority of pumping for the system occurs between April and October when salinity and temperature of adjacent bay waters are higher and the majority of the intake occurs during the fish work window (June – November) within San Francisco Bay. Use of intakes during sensitive seasonal periods for fish species (December 1 – May 31) will be avoided to the maximum extent feasible.

2.13.6 Employee Training

All employees attend mandatory environmental training annually. The training provides instruction on implementation of all BMPs as well as required documentation, communications, and reporting. Employees are trained to understand the permit conditions as further detailed in the various plans developed for conducting maintenance activities. Plans that have been developed to ensure implementation of BMPs as well as compliance with permit conditions include the following:

- Annual Work Plan
- Weed Management Plan
- SWPPP
- Predator Management Plan (USDA 2019)

In addition, every 5 years Cargill conducts an assessment of the effectiveness of the BMPs.

When conducting any maintenance work, staff document activities in a daily log. Information includes linear feet of activity, volume of material used, and observation of any sensitive biological species.

2.13.7 Effectiveness of BMPs

Cargill conducted a study to monitor the effectiveness of BMPs implemented as part of the previous permitting period (WRA 2016). Monitoring was conducted from 2010 to 2015. The results of the monitoring indicated that BMPs were effective at minimizing maintenance-related impacts on the environment, and that BMPs were implemented consistently (WRA 2016). Some examples of the effectiveness of the BMPs described in the study include:

- Cargill reduced the estimated area impacted from cuts, sidecasting and slipouts by more than 40 percent from the benchmark established in 1995.
- Choker berms were effective in reducing slipouts of sediment from the berms into the adjacent marsh. During the period of the study, Cargill achieved 100 percent compliance with prohibition against slip-outs.

- Revegetation of the lock access cuts improved significantly by carefully replacing dredged sediment into the access channel as the equipment leaves a pond system after the berm maintenance program has been completed.
- The use of berms, chokers and moving stockpiles closer to the berms reduced the resulting "footprint" of stockpiled sediment.
- Lock access during the study period was conducted between October and January to avoid impacts to sensitive species during their breeding seasons.
- Sensitive species buffers were implemented when needed (e.g., maintaining a suitable distance from seal pupping sites, and establishing a 600-foot buffer when snowy plovers were noted on a berm).
- Riprap was added to existing riprap areas only and sensitive habitats were avoided.

The improved BMPs for the proposed Project listed above would further avoid or minimize environmental effects.

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3.0 ENVIRONMENTAL IMPACT ANALYSIS

This section contains the evaluation of environmental effects that was completed for the proposed Cargill, Incorporated Solar Salt System Maintenance and Operations Activities Project in accordance with both the requirements of the BCDC's regulations as a Certified Regulatory Program under CEQA and Section 15253 of the CEQA Guidelines in order for other public agencies with permitting jurisdiction for the Project to rely on this EA when acting as a responsible agency to determine whether to approve the Project.

In determining whether there is a potential for an adverse change in the environment, continuance of existing activities is here considered part of the baseline (and would not be expected to result in a significant impact absent a relevant change in circumstances). The analyses in this section therefore focus on the potential changes to existing operations, as outlined in Section 2.10.8. In some instances, however, it was difficult to separate the new from existing activities. Where this was the case, because considering the impact of the new and existing operations together did not alter the conclusion that impacts would be less than significant or less than significant with mitigation that Cargill already implements under its existing permits, an inclusive consideration of Project activities (i.e., new and existing operations) was used for the environmental impact analysis.

While Cargill largely seeks only to re-authorize its existing operations, it proposes limited changes in its maintenance and operations activities going forward to facilitate enhanced berm maintenance and other activities for the purpose of mitigating the projected impacts of sea level rise on proposed continuation of existing operations. This may include modifications to existing maintenance methods to reduce environmental effects, increase efficiency, and/or adapt to changing climate conditions. Other operational changes are additionally considered to accommodate changes in other regulatory requirements.

3.1 SUMMARY OF ENVIRONMENTAL EFFECTS

Although not directly applicable to BCDC's EA process as a Certified Regulatory Program, a preliminary assessment of potential Project effects, using the CEQA checklist contained in Appendix G of the CEQA Guidelines, was completed prior to the initiation of this EA to evaluate whether the Project could have potentially significant effects on any environmental resources. Based on the analysis conducted, no impacts are expected to nine resource areas: aesthetics, agriculture and forest resources, energy, land use and planning, mineral resources, population and housing, public services, recreation, and wildfire. These resource areas are not further analyzed in this EA. The Project has the potential for impacts to eleven other resource areas, as described in the subsections that follow. Detailed analyses were conducted for resource areas identified as having a greater potential for substantial impacts (air quality, biology, hydrology/water quality, and noise); a streamlined analysis is presented for the resource areas identified as only having the potential for minor impacts.

3.2 EVALUATION OF ENVIRONMENTAL EFFECTS

BCDC developed significance criteria to evaluate the potential for significant impacts from the new and increased activities. Although not directly applicable to BCDC's EA process as a Certified Regulatory Program, BCDC considered the environmental impact questions contained in Appendix G of the State CEQA Guidelines in formulating the significance criteria. The analysis for each resource area identifies applicable significance criteria, describes site-specific conditions, analyzes potential impacts, evaluates the potential significance of identified impacts, and, where applicable, discusses ways to avoid or lessen impacts that may be potentially significant.

Table D-1 in Appendix D summarizes many of the federal and state laws, regulations and policies applicable to the Project, by resource area (these laws and regulations are cited, as applicable, in the regulatory setting for each resource area analyzed in this EA). As appropriate, local laws, regulations, and policies are described in the resource evaluation subsections.

3.3 AIR QUALITY

3.3.1 Environmental Setting

The San Francisco Bay Area has a Mediterranean climate. Its sub-areas closest to the Pacific Ocean and San Francisco Bay, which are strongly influenced by the marine environment and its steady onshore winds, have mild summers (i.e., average temperatures in the 70s degrees Fahrenheit [°F]) and cool winters (i.e., average temperatures in the 50s°F with rare occurrences of below-freezing temperatures (except in the higher elevations of the Santa Cruz Mountains). Sub-areas farther from the Ocean and Bay experience a somewhat wider seasonal temperature range.

3.3.1.1 Climatological and Topographical Influences on Local Air Quality

The Southwestern Alameda County climatological sub-region is mostly flat and is bordered to the east by the East Bay Hills and to the west by San Francisco Bay. The climate of this sub-region is influenced by Bay breezes, particularly at its western edge where the Project's Newark Plant 1 and Plant 2 areas are located, which have a moderating effect on temperatures. Winds are predominantly out of the northwest during the summer months. Winter winds are equally likely to be from the east. The Peninsula climatological sub-region, where the Project's Redwood City Plant and Cargill West Bay areas are located, includes the entire San Francisco peninsula from the Golden Gate south to San Jose. In Redwood City and environs, the climate is warmer and less foggy than the rest of the Peninsula, because the Santa Cruz mountain range to the west blocks the free movement of cooler air from the Pacific.

The air pollution potential of both sub-regions is relatively high in the summer and fall when regional winds can transport air pollutants from the more urbanized northern areas and where the confining terrain of the Santa Cruz Mountains and the East Bay Hills can concentrate them locally.

3.3.1.2 Criteria Air Pollutants and Toxic Air Contaminants

Criteria air pollutants are a group of pollutants for which federal or state regulatory agencies have adopted ambient air quality standards. The major criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (both PM_{10} and $PM_{2.5}$[5]). Most of the criteria pollutants are directly emitted. Ozone, however, is a secondary pollutant that is formed in the atmosphere by chemical reactions between oxides of nitrogen (NO_x) and reactive organic gases (ROG). Many other chemical compounds, generally termed toxic air contaminants (TACs), pose a present or potential hazard to human health through airborne exposure. Diesel particulate matter (DPM), the PM_{10} and $PM_{2.5}$ emitted by diesel engines, accounts for more than 80 percent of the inhalation cancer risk from TACs in the Bay Area (BAAQMD 2006), and is estimated to contribute about 70 percent of total known cancer risk related to air toxics statewide (CARB 2021).

[5] PM_{10} is particulate matter less than 10 microns in diameter and $PM_{2.5}$ is particulate matter less than 2.5 microns in diameter.

3.3.1.3 Sensitive Receptors

People who are more susceptible to the effects of air pollution within the general population, referred to as “sensitive receptors,” include children, the elderly, and those that suffer from certain illnesses or disabilities. Therefore, schools, convalescent homes, and hospitals are considered to be typical locations of sensitive receptors. Residential areas are also considered sensitive receptors because people (including children, the elderly and the sick) usually stay home for extended periods of time, which results in greater exposure to localized air pollutants.

3.3.1.4 Local Air Quality Monitoring

Ozone and suspended particulate matter are of particular concern in the Bay Area, which is currently designated “nonattainment” for state and national ozone ambient air quality standards, for the state PM_{10} standards, and for state and national $PM_{2.5}$ standards. It is in “attainment” or “unclassified” with respect to the other major criteria air pollutants: NOx, CO and SO_2 (BAAQMD 2020a).

The Bay Area Air Quality Management District (BAAQMD) operates an ambient air monitoring system consisting of over 30 local stations. The nearest air quality monitoring stations to the Project areas are in Hayward and Redwood City. The monitoring data in Table 3.3-1 summarize recent air monitoring data for the Hayward and Redwood City stations compared to those of the overall San Francisco Bay Area (BAAQMD 2020b).

Table 3.3-1. Summary of Criteria Air Pollutant Annual Monitoring Data

Pollutant	Standard	Monitoring Sites	Days Standard Exceeded		
			2016	2017	2018
Ozone	State 1-Hour	Hayward	0	2	0
		Redwood City	0	2	0
		San Francisco Bay Area	6	6	2
Ozone	State 8-Hour	Hayward	0	4	0
		Redwood City	0	2	0
		San Francisco Bay Area	15	6	3
Ozone	Federal 8-Hour	Hayward	0	3	0
		Redwood City	0	2	0
		San Francisco Bay Area	15	6	3
PM_{10}	State 24-Hour	Hayward	--	--	--
		Redwood City	--	--	--
		San Francisco Bay Area	0	6	6
PM_{10}	Federal 24-Hour	Hayward	--	--	--
		Redwood City	--	--	--
		San Francisco Bay Area	0	0	1
$PM_{2.5}$	Federal 24-Hour	Hayward	--	--	--
		Redwood City	0	6	13

Pollutant	Standard	Monitoring Sites	Days Standard Exceeded		
			2016	2017	2018
		San Francisco Bay Area	0	18	18
		Redwood City	0	0	0
		San Francisco Bay Area	0	0	0
		Redwood City	0	0	0
		San Francisco Bay Area	0	0	0
		Redwood City	0	0	0
		San Francisco Bay Area	0	1	0

Source: BAAQMD 2020b

3.3.1.5 Sources of Emissions

The primary sources of emissions associated with the proposed Project are the various types of equipment that would be used to conduct the maintenance activities (Section 2.11). All types of mobile equipment are subject to increasingly more stringent emissions requirements, and provided that the level of activity remains the same, emissions from maintenance equipment would generally be expected to decline over time as equipment is replaced with lower-emission models. Cargill also formerly operated a small dredge vessel, the Mallard, to maintain its salt pond berms. The Mallard was first put into service in 1952 (WRA 2007) and was taken out of service in 2016.

3.3.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Air quality is governed by the federal Clean Air Act and California Clean Air Act. Many of the cities and counties near the Project area have adopted general plans containing strategies and policies regarding air quality and emissions. Local goals, policies, and/or regulations applicable to this issue area are summarized in the subsections that follow.

In the Bay Area, CEQA air quality issues are typically evaluated using the BAAQMD methodologies and significance thresholds as specified in their *CEQA Air Quality Guidelines* (May 2017). The major air pollutant emissions needing evaluation are the ozone precursors, ROG and NO_x, and PM_{10} and $PM_{2.5}$. Health risks from Project and cumulative airborne exposures to TACs also need evaluation, especially regarding DPM (small-diameter particulate emissions from off-road, diesel-powered construction equipment), the TAC responsible for most of California's cumulative cancer risk from airborne TAC exposures.

According to the *CEQA Air Quality Guidelines*, any project would have a significant potential for causing a local air quality standard violation or making a cumulatively considerable contribution to a regional air quality problem if its pollutant/TAC emissions would exceed any of the thresholds presented in Table 3.3-2 during construction or operation. The *Guidelines* also recommend the evaluation of the health risks of project TACs or $PM_{2.5}$ impacting any local sensitive receptors within 1,000 feet of the project site.

Table 3.3-2. BAAQMD CEQA Air Quality Thresholds of Significance

Criteria Air Pollutants and Precursors	Average Daily Construction Emissions (lbs./day)	Average Daily Operational Emissions (lbs./day)	Maximum Annual Operational Emissions (tons/year)
ROG	54	54	10
NO_X	54	54	10
PM_{10} (equipment exhaust)	82	82	15
$PM_{2.5}$ (equipment exhaust)	54	54	10
PM_{10}/$PM_{2.5}$ (fugitive dust)	Best Management Practices	None	None
Risks and Hazards for New Sources and Receptors (Individual Project)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (HI) (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average <u>Zone of Influence</u>: 1,000-foot radius from fence line of source or receptor	
Risks and Hazards for New Sources and Receptors (Cumulative Threshold)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >100 in a million (from all local sources) Increased non-cancer risk of > 10 Hazard Index (HI) (from all local sources) (Chronic) Ambient $PM_{2.5}$ increase: > 0.8 µg/m^3 annual average (from all local sources) <u>Zone of Influence</u>: 1,000-foot radius from fence line of source or receptor	
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years	

Source: California Environmental Quality Act Air Quality Guidelines (BAAQMD 2017b).

BCDC's San Francisco Bay Plan (BCDC 2020) does not have any policies pertaining directly to air quality relevant to this Project. Local policies pertaining to air quality are summarized in the following subsections.

3.3.2.1 City of Fremont General Plan

- Policy 7-7.1: Cooperation to Improve Regional Air Quality - Support and coordinate air quality planning efforts with other local, regional and State agencies to improve regional air quality
- Policy 7-7.2: Reduce Air Pollution Levels - Reduce City of Fremont air contaminant levels and particulate emissions below BAAQMD attainment levels, in particular, ozone and particulate matter levels.
- Policy 7-7.4: Air Quality Impact of Industry - Reduce the air quality impacts created by truck traffic, hazardous materials and industry.

3.3.2.2 City of Hayward General Plan

- NR-2.1 Ambient Air Quality Standards. The City shall work with the California Air Resources Board (CARB) and BAAQMD to meet State and Federal ambient air quality standards in order to protect all residents from the health effects of air pollution.
- NR-2.3 Emissions Reduction. The City shall require development projects that exceed Bay Area Air Quality Management District reactive organic gas (ROG), nitrogen oxide (NOX) operational thresholds to incorporate design or operational features that reduce emissions equal to at least 15 percent below the level that would be produced by an unmitigated project.
- NR-2.7 Coordination with BAAQMD. The City shall coordinate with the BAAQMD to ensure projects incorporate feasible mitigation measures to reduce greenhouse gas emissions and air pollution if not already provided for through project design.
- NR-2.16 Sensitive Uses. The City shall minimize exposure of sensitive receptors to TACs, $PM_{2.5}$, and odors to the extent possible, and consider distance, orientation, and wind direction when siting sensitive land uses in proximity to TAC- and $PM_{2.5}$-emitting sources and odor sources in order to minimize health risk.
- NR-2.17 Source Reduction Measures. The City shall coordinate with and support the efforts of the Bay Area Air Quality Management District, the CARB, the U.S. Environmental Protection Agency, and other agencies as appropriate to implement source reduction measures and best management practices that address both existing and new sources of TACs, $PM_{2.5}$, and odors.
- NR-2.19 Exposure Reduction Measures for both Existing and New Receptors. The City shall work with area businesses, residents and partnering organizations to provide information about best management practices that can be implemented on a voluntary basis to reduce exposure of sensitive receptors to TACs and $PM_{2.5}$.

3.3.2.3 City of Menlo Park General Plan

Policy OSC5.1 - Air and Water Quality Standards. Continue to apply standards and policies established by the BAAQMD, San Mateo Countywide Water Pollution Prevention Program, and

City of Menlo Park Climate Action Plan through the CEQA process and other means as applicable.

3.3.2.4 City of Newark General Plan

- Policy HW-1.1 Air Quality Plans. Work with appropriate state, federal, and regional agencies to develop and implement programs that help the San Francisco Air Basin meet state and federal air quality standards.
- Policy HW-1.5 Cleaner Fuels. Encourage the use of cleaner burning fuels and low-emission vehicles.
- Policy HW-1.7 Odors. Reduce the emission of undesirable odors from manufacturing and commercial activities.

3.3.2.5 Redwood City General Plan

- Policy PS-1.1: Work with neighboring jurisdictions and regional agencies—including the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD) and the Metropolitan Transportation Commission (MTC)—to reduce motor vehicle emissions.
- Policy PS-1.3: Pursue efforts to reduce air pollution and greenhouse gas emissions by promoting the use of renewable energy (e.g., wind, and hydroelectric power), and implement effective energy conservation and efficiency measures.
- Policy PS-2.5: Encourage the development and/or implementation of new technologies that address or mitigate pollutant emissions at the Port, transportation facilities, and industrial use locations.

3.3.3 Impact Analysis

Potential impacts to air quality would be considered significant if implementation of the proposed Project would do any of the following:

- Conflict with or obstruct an applicable air quality plan
- Create a cumulatively considerable net increase of one or more criteria pollutants for which the Project region is in non-attainment, or
- Expose sensitive receptors to substantial pollutant concentrations

These significance criteria are the basis for the following impact analysis.

3.3.3.1 Impact AQ-1: Conflict with or Obstruction of an Applicable Air Quality Plan

Less than Significant Impact. In the Bay Area, the current applicable regional air quality plan is the BAAQMD's (2017a) *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 Plan), which focuses on two closely-related goals: protecting public health and protecting the climate (the latter addressed in Section 3.7). The 2017 Plan defines an integrated, multipollutant control strategy to reduce emissions of particulate matter, TACs, ozone precursors, and GHGs based on four key priorities:

- Reduce emissions of criteria air pollutants and TACs from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel and natural gas).
- Decarbonize the energy system.

The purpose of the Project is to continue existing maintenance activities of the existing salt works in Newark and Redwood City, and to initiate limited SLR adaptation activities. The Project would allow the salt works to continue in operation at about the same salt production level as at present. It would not have the potential to substantially increase regional population, employment or transportation levels in Alameda or San Mateo Counties, or the Bay Area, all of which are the bases of the 2017 Plan's regional emission inventories and the emission control policies they support. Therefore, the Project would not impede attainment of 2017 Plan goals as it would not increase emissions on the basis of any of the identified contributory sources (population, employment, transportation).

Also, compliance with all CEQA air quality significance thresholds is a necessary condition for determining that a project would not interfere with the attainment of air quality plan goals. As the additional analyses that follow demonstrate, the Project would not interfere with the 2017 Plan because even if it proposed a new or expanded source of emissions, it would meet all CEQA limits on regional air pollutant emissions and TAC health risks to the local population. As it is, most of the facility's operations and maintenance emissions will not change and are part of the environmental baseline. Therefore, Project impacts to/conflicts with the 2017 Plan would be less than significant.

3.3.3.2 Impact AQ-2: Cumulatively Considerable Net Increase of Criteria Pollutant for which the Project Region is in Non-Attainment

Less than Significant Impact. The *CEQA Air Quality Guidelines* recommend quantification of construction and operational air pollutant and GHG emissions using the California Emissions Estimator Model (CalEEMod) (CAPCOA 2017). This was done for sixteen identified maintenance activities essential to the existing and proposed future operation of the salt works. Off-road equipment and vehicular pollutant emission rates were taken from CalEEMod (Version 2016.3.2, Appendix D). Marine emission factors were taken from *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California* (CARB 2012).

Baseline emissions were estimated for the thirteen identified maintenance activities associated with the existing permitted salt works during a typical year, as shown in Table 3.3-3 (in lbs./average day) and Table 3.3-4 (in tons/year).

Table 3.3-3. Cargill Solar Sea Salt System Maintenance - Baseline Air Pollutant Emissions (in lbs./annual average workday)

Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	9.66	0.53	0.26	0.24
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	9.66	0.53	0.26	0.24
Maintain Berm Height/Width	Off-Road	2.18	0.23	0.10	0.09
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	2.18	0.23	0.10	0.09
Compact Internal Core of Berm	Off-Road	2.33	0.24	0.09	0.09
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	2.33	0.25	0.09	0.09
Making Berms Drivable	Off-Road	1.60	0.16	0.07	0.07
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.61	0.16	0.07	0.07
Outboard Erosion Repair	Off-Road	1.02	0.10	0.04	0.04
	On-Road	0.05	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.07	0.10	0.04	0.04
Interior Erosion Repair	Off-Road	1.02	0.10	0.04	0.04
	On-Road	0.05	0.00	0.00	0.00
	Marine	4.79	0.86	0.12	0.12
	Total	5.86	0.96	0.16	0.16
Lock Access	Off-Road	0.07	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.28	0.05	0.01	0.01
	Total	0.35	0.06	0.01	0.01
Vinyl Sheet Pile Installation	Off-Road	1.30	0.11	0.05	0.05
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.30	0.11	0.05	0.05

Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Minor Earthmoving Activities	Off-Road	0.47	0.05	0.02	0.02
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.47	0.05	0.02	0.02
Repair of Water Control Structures	Off-Road	0.81	0.08	0.04	0.03
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.82	0.08	0.04	0.03
Repair of Access Structures	Off-Road	0.28	0.03	0.02	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.28	0.04	0.02	0.01
Minor Maintenance and Repair	Off-Road	0.14	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.14	0.02	0.01	0.01
Algae Removal from Ponds	Off-Road	0.08	0.01	0.00	0.00
	On-Road	0.01	0.00	0.00	0.00
	Marine	0.12	0.02	0.01	0.01
	Total	0.21	0.02	0.01	0.01
All Maintenance Activities	**Off-Road**	**20.94**	**1.66**	**0.74**	**0.68**
	On-Road	**0.14**	**0.03**	**0.00**	**0.00**
	Marine	**5.20**	**0.93**	**0.14**	**0.14**
	Grand Total	**26.28**	**2.61**	**0.88**	**0.82**

Table 3.3-4. Cargill Solar Sea Salt System Maintenance - Baseline Air Pollutant Emissions (in tons/year)

Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Berm Grading	Off-Road	1.16	0.06	0.03	0.03
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.16	0.06	0.03	0.03

Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Maintain Berm Height/ Width	Off-Road	0.26	0.03	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.26	0.03	0.01	0.01
Compact Internal Core of Berm	Off-Road	0.28	0.03	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.28	0.03	0.01	0.01
Making Berms Drivable	Off-Road	0.19	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.19	0.02	0.01	0.01
Outboard Erosion Repair	Off-Road	0.12	0.01	0.00	0.00
	On-Road	0.01	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.13	0.01	0.00	0.00
Interior Erosion Repair	Off-Road	0.12	0.01	0.00	0.00
	On-Road	0.01	0.00	0.00	0.00
	Marine	0.58	0.10	0.01	0.01
	Total	0.70	0.12	0.02	0.02
Lock Access	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.03	0.01	0.00	0.00
	Total	0.04	0.01	0.00	0.00
Vinyl Sheet Pile Installation	Off-Road	0.16	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.16	0.01	0.01	0.01
Minor Earthmoving Activities	Off-Road	0.06	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.06	0.01	0.00	0.00
Repair of Water Control Structures	Off-Road	0.10	0.01	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00

Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
	Marine	0.00	0.00	0.00	0.00
	Total	0.10	0.01	0.00	0.00
Repair of Access Structures	Off-Road	0.03	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.03	0.00	0.00	0.00
Minor Maintenance and Repair	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.02	0.00	0.00	0.00
Algae Removal from Ponds	Off-Road	0.01	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.01	0.00	0.00	0.00
	Total	0.03	0.00	0.00	0.00
All Maintenance Activities	**Off-Road**	**2.51**	**0.20**	**0.09**	**0.08**
	On-Road	**0.02**	**0.00**	**0.00**	**0.00**
	Marine	**0.62**	**0.11**	**0.02**	**0.02**
	Grand Total	**3.15**	**0.31**	**0.11**	**0.10**

Net new Project incremental emissions above baseline were estimated for the expansion of one maintenance activity category and the addition of three new identified maintenance activities associated with continued salt works operation under a proposed new BCDC permit, as shown in Table 3.3-5 (in lbs./average day) and Table 3.3-6 (in tons/year). Project incremental emissions are less than the BAAQMD CEQA significance thresholds. Therefore, the Project would not make cumulatively considerable contributions to the Bay Area's regional problems with ozone or particulate matter. Cumulative emission impacts would be less than significant.

Table 3.3-5. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in lbs./annual average workday)

New/Additional Project Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Address Priority Berms for SLR	Off-Road	2.18	0.23	0.10	0.09
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	2.18	0.23	0.10	0.09

New/Additional Project Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Additional Lock Access	Off-Road	0.15	0.01	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.62	0.11	0.02	0.02
	Total	0.78	0.13	0.02	0.02
Sediment Removal from Intakes	Off-Road	0.21	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.72	0.12	0.02	0.02
	Total	0.93	0.14	0.03	0.03
Re-establishing Vehicle Access on Internal Berms	Off-Road	1.67	0.16	0.07	0.07
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	1.67	0.16	0.07	0.07
Net New Emissions from New/Additional Project Maintenance Activities	**Off-Road**	**4.20**	**0.42**	**0.19**	**0.17**
	On-Road	**0.01**	**0.01**	**0.00**	**0.00**
	Marine	**1.34**	**0.23**	**0.04**	**0.04**
	Total	**5.56**	**0.66**	**0.22**	**0.21**
	Significance Thresholds	**54**	**54**	**82**	**54**
	Significant Impact?	**No**	**No**	**No**	**No**
	Comparison with Baseline Maintenance Activities Emissions	**+21%**	**+25%**	**+25%**	**+25%**
	Baseline Total Emissions	26.28	2.61	0.88	0.82

Table 3.3-6. Cargill Solar Sea Salt System Maintenance – Project Incremental Air Pollutant Emissions (in tons/year)

New/Additional Project Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Address Priority Berms for SLR	Off-Road	0.26	0.03	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.26	0.03	0.01	0.01

New/Additional Project Maintenance Activity	Emission Source	NOx	ROG	PM_{10}	$PM_{2.5}$
Additional Lock Access	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.07	0.01	0.00	0.00
	Total	0.09	0.02	0.00	0.00
Sediment Removal from Intakes	Off-Road	0.02	0.00	0.00	0.00
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.09	0.01	0.00	0.00
	Total	0.11	0.02	0.00	0.00
Re-establishing Vehicle Access on Internal Berms	Off-Road	0.20	0.02	0.01	0.01
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	0.20	0.02	0.01	0.01
Net New Emissions from New/Additional Project Maintenance Activities	**Off-Road**	**0.50**	**0.05**	**0.02**	**0.02**
	On-Road	**0.00**	**0.00**	**0.00**	**0.00**
	Marine	**0.16**	**0.03**	**0.00**	**0.00**
	Total	**0.67**	**0.08**	**0.03**	**0.02**
	Significance Thresholds	**54**	**54**	**82**	**54**
	Significant Impact?	**No**	**No**	**No**	**No**
	Comparison with Baseline Maintenance Activities Emissions	**+21%**	**+25%**	**+25%**	**+25%**
	Baseline Total Emissions	3.15	0.31	0.11	0.10

3.3.3.3 Impact AQ-3: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Less than Significant Impact. Ambient TAC concentrations produced by Project sources in combination with other substantial TAC sources within 1,000 feet of a Project site (i.e., the “zone of influence”) are considered significant if they exceed the Project-level and/or cumulative BAAQMD CEQA health risk thresholds, respectively, at sensitive receptors within the zone.

The Project has two main locations: one in Newark, the other in Redwood City. Areas surrounding both sites are largely occupied by commercial/industrial land uses or recreational open space uses, and thus are not considered sensitive to TAC exposures. But there are exceptions for both sites. At Newark, there are existing residential uses at the end of Central Avenue near the Project site's western boundary. At Redwood City, there are existing residential uses (i.e., the RC Mobile Home Park, Redwood Mobile Estates, Harbor Village Mobile Home Park, and Trailer Rancho) in the strip of land between that plant's southern boundary and US-101. Each of these residential uses are within the local zones of influence requiring evaluation and are considered the Maximally Exposed Sensitive Receptors (MESRs).

Cancer risk is the lifetime probability of developing cancer from exposure to carcinogenic substances. Following health risk assessment (HRA) guidelines established by the BAAQMD (2012) in *Recommended Methods for Screening and Modeling Local Risks and Hazards*, incremental cancer risks are estimated by applying established toxicity factors to modeled TAC concentrations, while other chronic adverse health impacts unrelated to cancer are measured by hazard indexes (HIs), defined as the ratio of a project's incremental TAC exposure concentration to a published reference exposure level (REL). CEQA significance thresholds for TACs are based on assumptions of exposure duration of a year or longer (i.e., a year for $PM_{2.5}$ concentrations and chronic non-cancer health impacts; 70 years for cancer risk).

Ambient DPM (the primary Project-related TAC evaluated in this EA) produced by off-road earth-moving equipment, motor vehicles, and marine sources associated with the identified Project maintenance activities could substantially affect sensitive receptors near the activity locations if such emissions were strong enough and/or lasted long enough. Annual DPM emissions from all baseline and Project incremental maintenance activities were estimated as shown in Table 3.3-4 and Table 3.3-6, respectively (note: essentially all $PM_{2.5}$ from diesel-powered equipment is DPM). Over the 10 year period covered by the proposed Project, maintenance activities could occur at many on-site locations, possibly extending over the entire area of the Newark Plant and Redwood City Plant sites (i.e., Newark Plant 1 – 4100 acres; Newark Plant 2 – 6400 acres; Redwood City Plant – 1430 acres; Total Project area – about 12,000 acres).

It is not feasible to determine in advance exactly where Project-related activities would occur in any given year. However, it is reasonable to expect that they would occur over an extended portion of the Project area. Some activities may occur within 100 feet of the MESRs, while other activities would be located more than 3 miles away. Because it is not feasible to determine the exact locations of all activities in advance, the air quality evaluation considered a worst case scenario where all of the Project-related activities would occur close to the MESRs. To estimate worst-case annual risk/hazard/$PM_{2.5}$ levels at each MESR, it was assumed that all baseline and Project incremental maintenance emission sources during an exposure year would be located for that year in a 5,000-foot-long/500-foot-wide strip of land on either Plant site adjacent to the MESR. Dispersion of DPM emissions and annual concentrations were then estimated by using the USEPA's SCREEN3 model. Using these assumptions, the worst-case cancer risk from baseline and Project-incremental maintenance DPM at either MESR would be 0.408 additional cancer cases per million people exposed, which is well below the project-level CEQA threshold for cancer risk (100); the HI from baseline and Project-incremental maintenance DPM would be 0.011, which is well below the threshold for chronic hazard (10); and the annual $PM_{2.5}$

concentration from baseline and Project-incremental maintenance would be 0.053 µg/m^3, which is well below the threshold for an annual $PM_{2.5}$ increment (0.8 µg/m^3). Thus, Project-related TAC health risk/hazard/ $PM_{2.5}$ increment to the MESRs near the Newark or the Redwood City sites would be less than significant.

Determining cumulative TAC health risk/hazard/ $PM_{2.5}$ increment requires the tallying of risks/hazards/ $PM_{2.5}$ levels from substantial Project sources and from all existing permitted stationary and major mobile sources of TACs within 1,000 feet of a project site, and then adding them for comparison with the BAAQMD cumulative thresholds. A database of risk/hazard/ $PM_{2.5}$ from permitted stationary emissions sources and major highways is available online (BAAQMD's [2020c] *Permitted Sources Risk and Hazards Map* and *Highway Screening Analysis Tool*). The locations of listed stationary and mobile sources can be plotted on aerial photographs with Google Earth, as shown in Figure 3.3-1 and Figure 3.3-2 for the vicinities of the Project's Newark Plant and Redwood City Plant sites, respectively.

As shown in Table 3.3-7 and Table 3.3-8, the cumulative cancer risk, HI, and $PM_{2.5}$ levels at the MESRs near the Newark and Redwood City sites are all be below all the BAAQMD cumulative significance thresholds.

Figure 3.3-1. Locations of Listed Stationary and Mobile Sources Near the Cargill Newark Plant Sites

Source: BAAQMD

Figure 3.3-2. Locations of Listed Stationary and Mobile TAC Sources Near the Cargill Redwood City Plant.

Source: BAAQMD

Table 3.3-7. Project Incremental and Cumulative TAC Impacts at the MESR in Cargill Newark's Zone of Influence

Source	Description	Cancer Risk*	Hazard Index*	$PM_{2.5}$ Concentration*
Permitted Stationary TAC Sources	Source Number: 15307 Sanmina -- SCI8455 Cabot Court	0.000	0.002	0.000
Major Roadways	None within 1000 feet of Project site	----	----	----
Project Sources	Project Incremental from Maintenance Activities	0.408	0.011	0.053
Project Sources	Total Cumulative Impacts	0.408	0.013	0.053
Project Sources	Significance Thresholds	100	10	0.8
Project Sources	Significant Cumulative Impact?	No	No	No

* The BAAQMD stationary source and roadway cancer risks, hazard indexes, and $PM_{2.5}$ concentrations from its database represent maximum TAC impacts at locations close to the sources. The BAAQMD also provides distance adjustment factors to estimate risks, hazards and concentrations at more distant locations. These distance adjustments have been applied to obtain the cancer risks, hazard indexes, and $PM_{2.5}$ concentrations at the MESR, the existing residential receptor in the zone of influence most impacted by existing local stationary and mobile TAC sources and by TACs from Cargill maintenance activities.

Given that, in actuality, Project maintenance activities would occur at many locations distributed over both the Newark and Redwood City Plant sites over the 10-year period proposed by the Project, the Project TAC risk/hazard/$PM_{2.5}$ level at any location in the zones of influence would be much less than those required to threaten adverse health impacts under the CEQA project-level significance thresholds. Thus, the Project's contribution to cumulative TAC impacts at any location in the zones of influence would also be less than considerable, and since the cumulative thresholds are not exceeded, the overall cumulative TAC impacts would be less than significant.

Table 3.3-8. Project Incremental and Cumulative TAC Impacts at the MESR in Cargill Redwood City's Zone of Influence

Source	Source/Description/Address	Cancer Risk*	Hazard Index*	$PM_{2.5}$ Concentration*
Permitted Stationary TAC Sources	Source Number 7505 Porta's Auto Body & Towing Inc. 3020 Rolison Road	0.000	0.000	0.000
	Source Number 17482 City of Redwood City (Generator) 3011 East Bayshore Road	0.047	0.000	0.000
	Source Number 23017 Sequoia Union High School District (Generator) 1090 Mills Way	0.039	0.000	0.000
	Source Number 23966 Carbon Inc. (Generator) 1089 Mills Way	0.000	0.000	0.000
	Source Number 109814 Dept. of Transportation Redwood City (Gas Station) 2501 East Bayshore Road	0.455	0.002	0.000
	Source Number 200064 Sequoia Union High School - Transportation & Maintenance Facility (Gas Station) 1061 Douglas Avenue	0.201	0.001	0.000
Major Roadways	Highway 101 (MESRs are the mobile home units closest to the Cargill south boundary)	31.695	----	0.584
Project Sources	Project Incremental from Maintenance Activities	0.408	0.011	0.053
	Total Cumulative Impacts	32.845	0.014	0.637
	Significance Thresholds	100	10	0.8
	Significant Cumulative Impact?	No	No	No

* The BAAQMD stationary source and roadway cancer risks, hazard indexes, and $PM_{2.5}$ concentrations from its database represent maximum TAC impacts at locations close to the sources. The BAAQMD also provides distance adjustment factors to estimate risks, hazards and concentrations at more distant locations. These distance adjustments have been applied to obtain the cancer risks, hazard indexes, and $PM_{2.5}$ concentrations at the MESR,

the existing residential receptor in the zone of influence most impacted by existing local stationary and mobile TAC sources and by TACs from Cargill maintenance activities.

3.3.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.4 BIOLOGICAL RESOURCES

This section describes the biological resources (vegetation, fish, wildlife, and their habitats) in the Project area, and identifies potential impacts on sensitive biological resources that could result from implementation of the Project. The analysis concludes that the Project would have less-than-significant impacts to biological resources.

3.4.1 Environmental Setting

The scope of analysis consists of the Project area totaling approximately 12,100 acres, as well as a 1,000-foot-wide buffer around those features to account for potential effects to adjacent species and habitats (e.g., California Ridgway's rail [CRR; *Rallus obsoletus obsoletus*] nesting outside of the Project area). The Project area and surrounding 1,000-foot-wide buffer are referred to as the Biological Study Area (BSA), encompassing approximately 19,482 acres. Within the BSA, habitat generally consists of salt ponds, tidal marsh, intertidal mudflat, and tidal open water (Figure 3.4-1). The essential features of these habitats and associated biological conditions are discussed in the following subsections. The habitat types can generally be grouped as "internal" or "external" to the salt production system (as defined in Section 2.3.4), and species habitat values are addressed under these terms within this assessment.

The majority of work relating to salt production is confined to internal areas of the salt production system. Internal areas can provide roosting and foraging habitat for birds, as well as limited habitat for certain fish, brine shrimp, and other species depending on the level of saline and hypersaline conditions. Occasionally it is necessary for limited work to be done outside of the salt production system in external areas. External areas may contain a suite of organisms that typically do not occur within the internal areas, including a number of special-status species considered in this assessment.

3.4.1.1 Internal Areas - Salt Ponds, Internal Berms, and the Inboard Sides of Outboard Berms

<u>Salt Ponds</u>

Salt ponds are shallow, and salinity concentrations within them range from levels similar to Bay water to levels that are too high to support most aquatic life. Salt ponds in the South Bay are characterized by expanses of non-tidal open water, bare mud, or bare salt flats surrounded by barren to sparsely vegetated berms. Vegetation, where it is present, is limited primarily to narrow bands along the berms. Pond conditions, including salinity, dissolved oxygen, turbidity, temperature, and depth, vary throughout the year depending on the pond function, evaporative stage, season, and management actions. Open channel brine conveyances adjacent to the salt ponds are used to move brines around as necessary during operations and maintenance activities. The open channel brine conveyances may be dry or flooded depending on brine transfer activities and the majority of brine flow occurs by gravity feed although some pumping also occurs to move brine.

Salt ponds generally decrease in water depth and increase in salinity from the summer through the fall (Takekawa et al. 2001). The greatest levels of evaporation (and increases in pond salinity) occur during the dry season of April through October. During the remaining portion of

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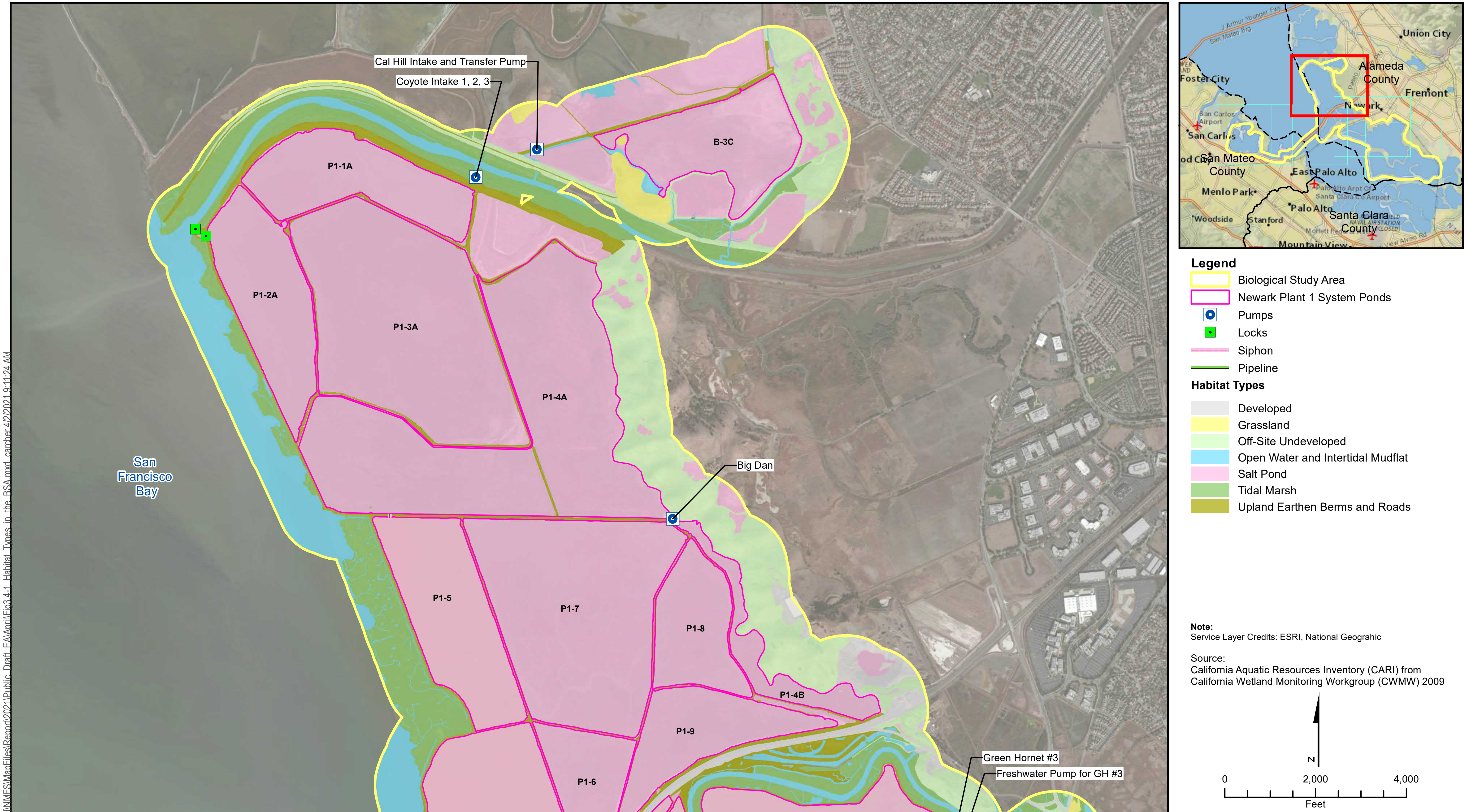
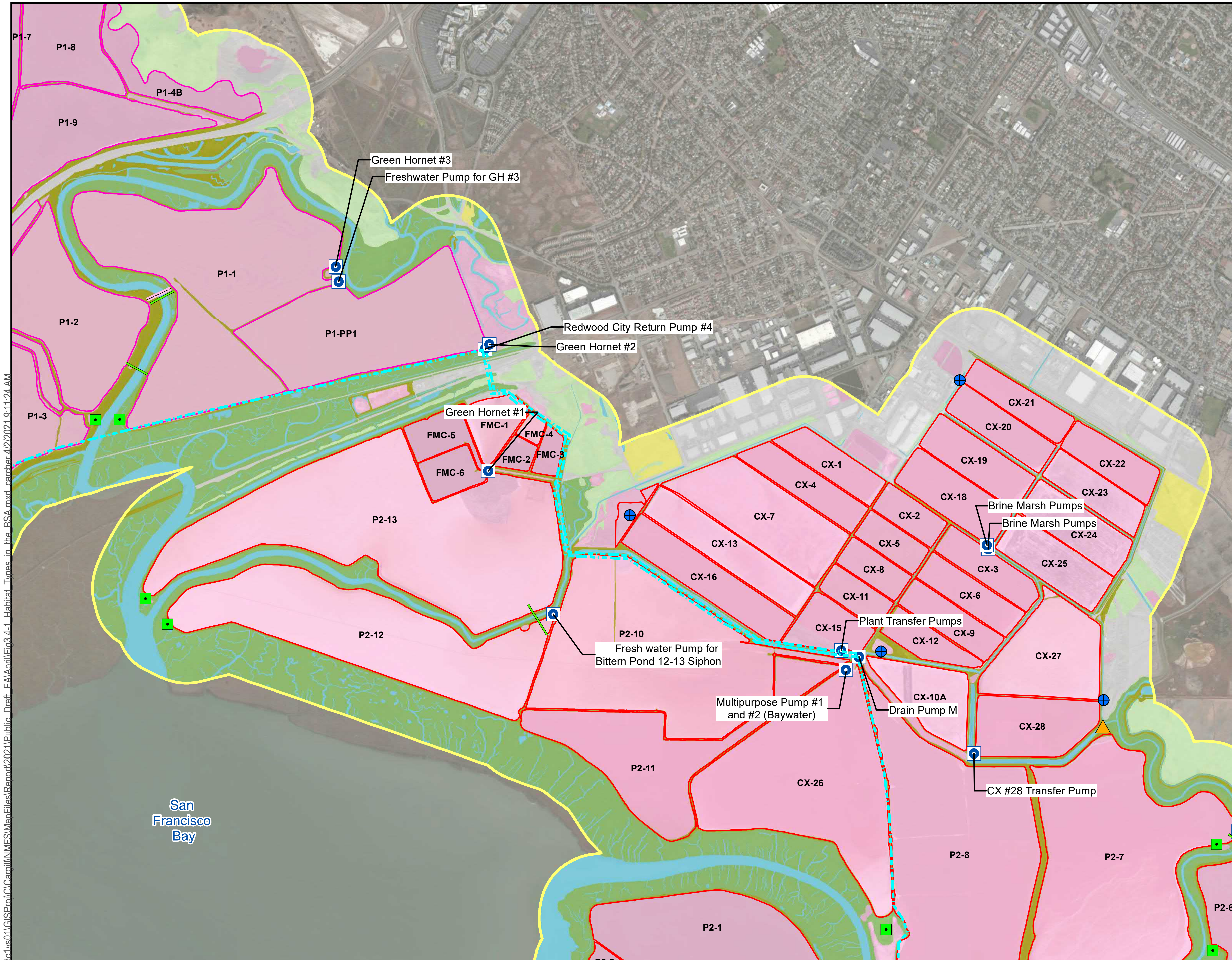
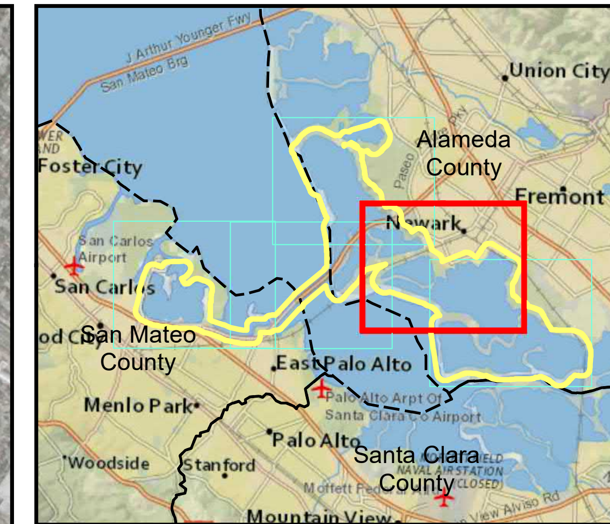


Figure 3.4-1
Map 1 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Redwood City Return Pump #4

Jacobs





Legend

- Biological Study Area
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Grassland
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads

Note:
Service Layer Credits: ESRI, National Geographic

Source:
California Aquatic Resources Inventory (CARI) from
California Wetland Monitoring Workgroup (CWMW) 2009

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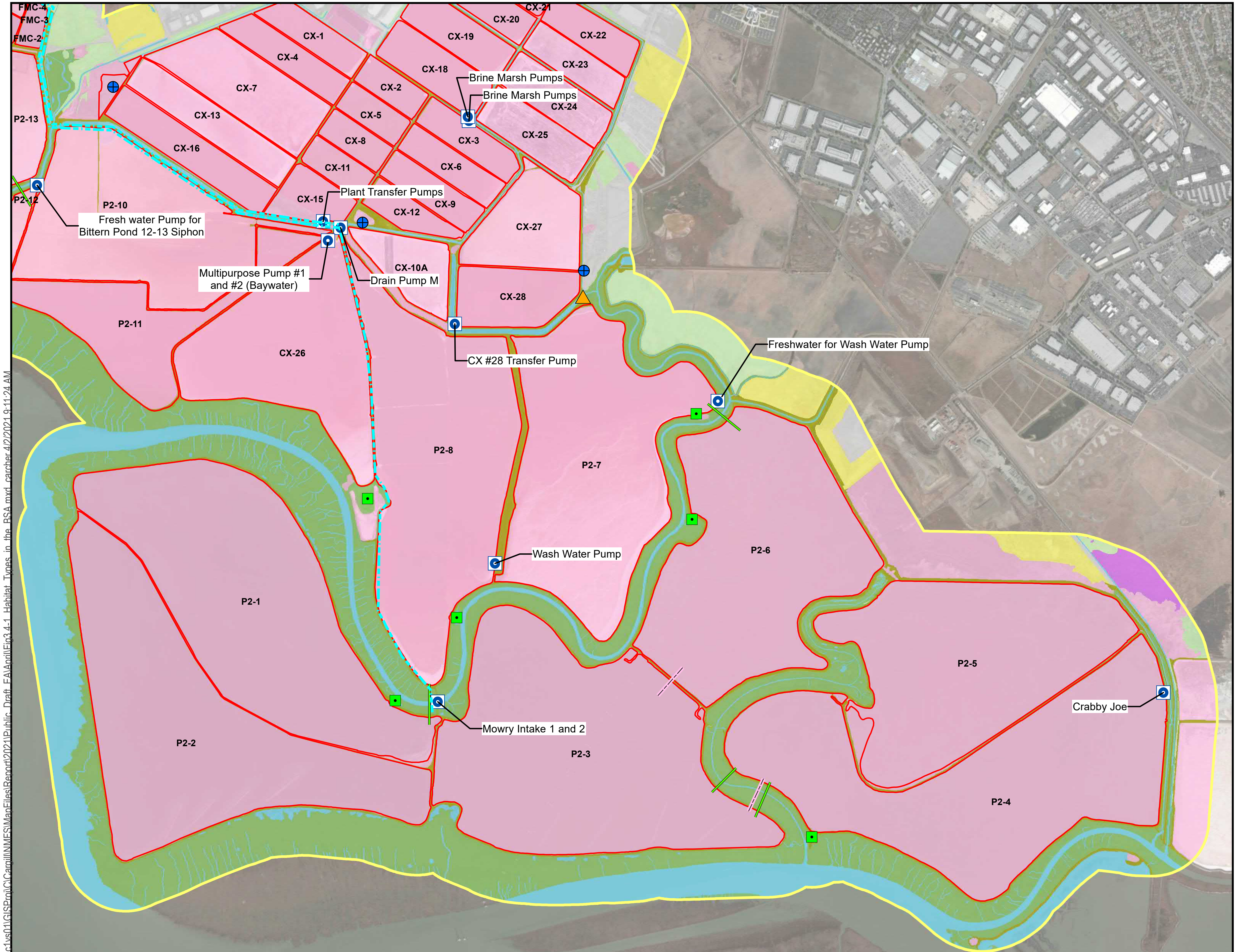
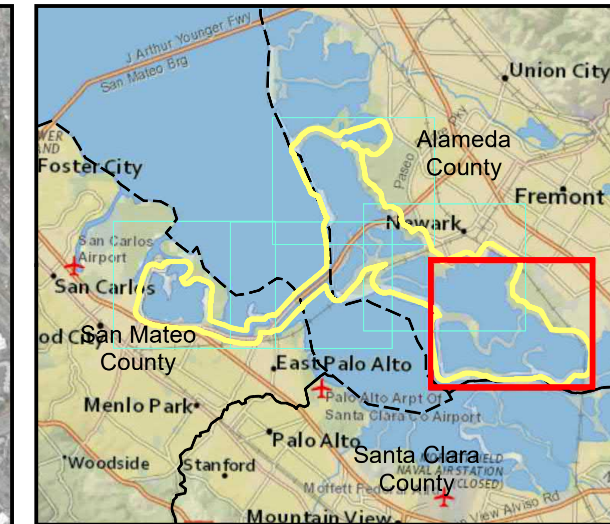
Feet

Figure 3.4-1
Map 2 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs





Legend

- Biological Study Area
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Grassland
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads
- Vernal Pool

Note:
Service Layer Credits: ESRI, National Geographic

Source:
California Aquatic Resources Inventory (CARI) from
California Wetland Monitoring Workgroup (CWMW) 2009

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Figure 3.4-1
Map 3 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs

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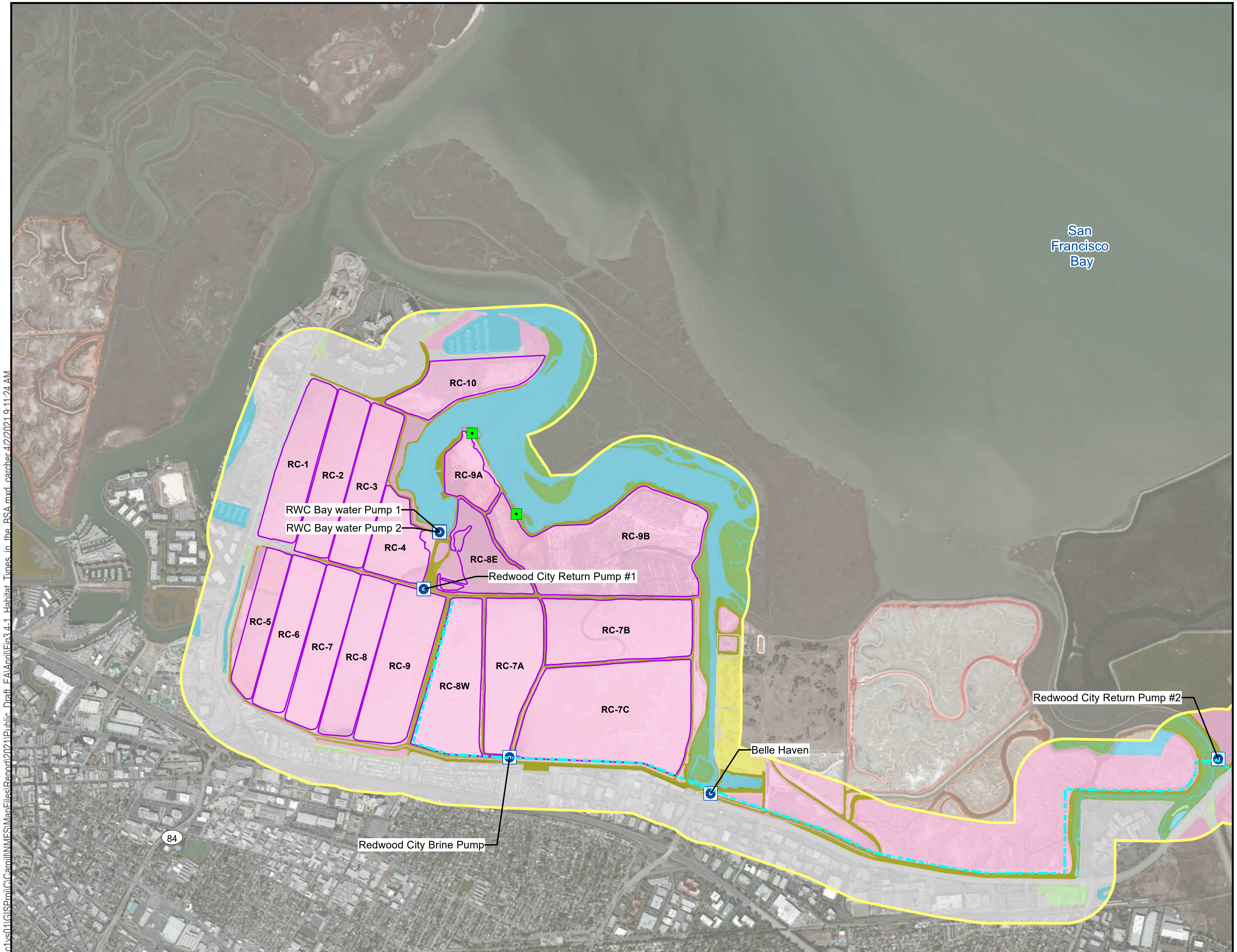

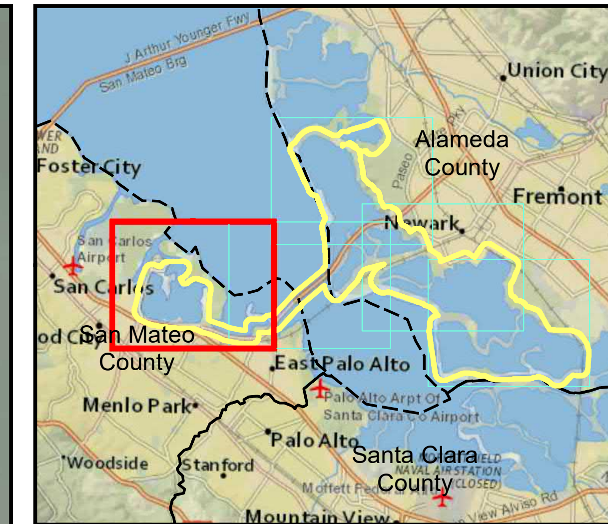

Legend

- Biological Study Area
- Redwood City Plant System Ponds
- Pumps
- Locks
- Brine Pipeline

Habitat Types

- Developed
- Grassland
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads

Note:
Service Layer Credits: ESRI, National Geographic

Source:
California Aquatic Resources Inventory (CARI) from California Wetland Monitoring Workgroup (CWMW) 2009

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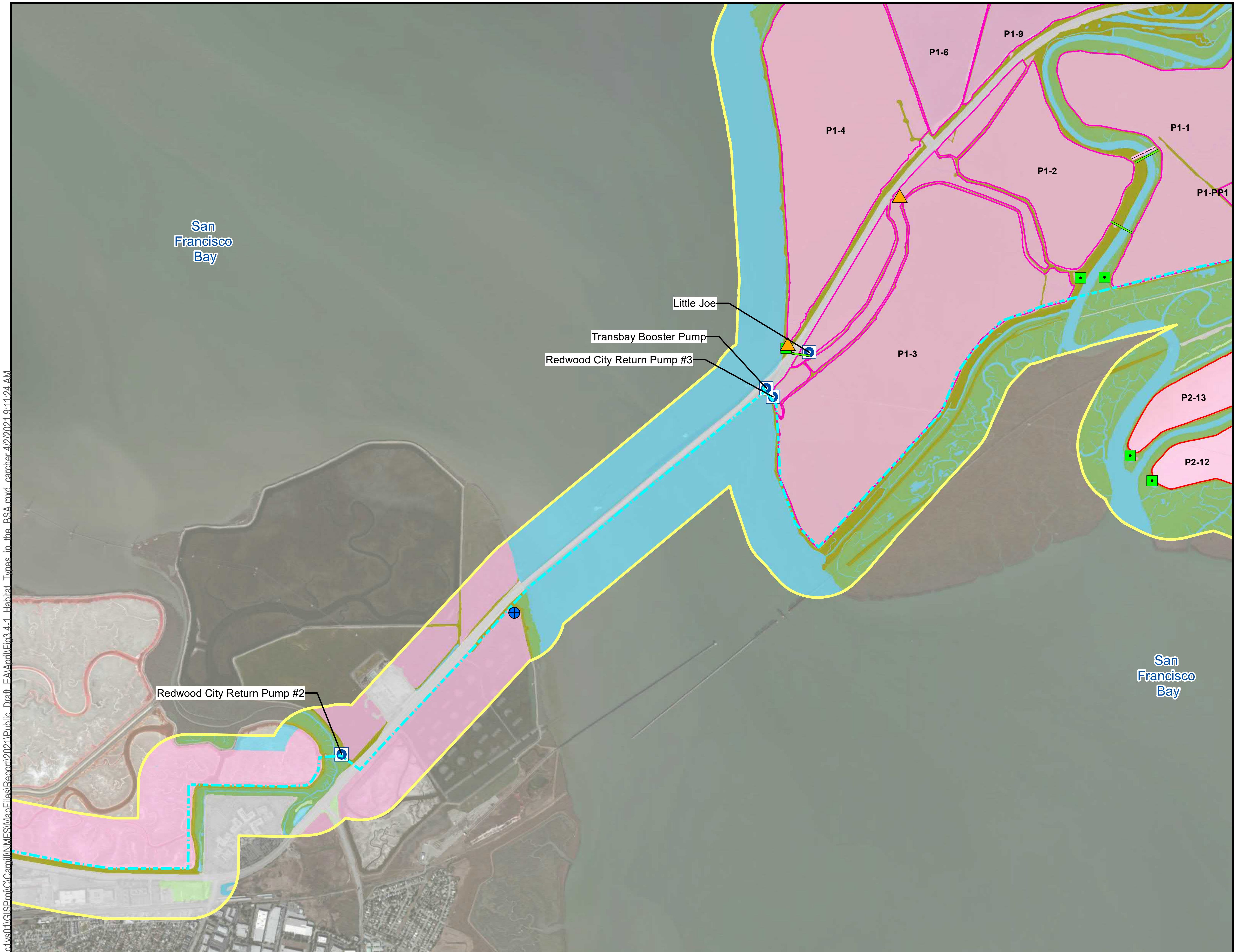
Figure 3.4-1
Map 4 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

Jacobs



Legend

- Biological Study Area
- Newark Plant 1 System Ponds
- Newark Plant 2 System Ponds
- Pumps
- Locks
- Multipurpose Ditch Intake
- Stockpile Location
- Brine Pipeline
- Siphon
- Pipeline

Habitat Types

- Developed
- Off-Site Undeveloped
- Open Water and Intertidal Mudflat
- Salt Pond
- Tidal Marsh
- Upland Earthen Berms and Roads

Note:
Service Layer Credits: ESRI, National Geographic

Source:
California Aquatic Resources Inventory (CARI) from California Wetland Monitoring Workgroup (CWMW) 2009

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Figure 3.4-1
Map 5 of 5
Habitat Types in the Biological Study Area
Cargill
Alameda and San Mateo County, CA

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the year, seasonal rainfall dilutes pond brines, resulting in a decrease in salinity and increase in water depth. Changes in salinity and depth contrary to these patterns may occur when management actions take place such as the transfer of brines between ponds.

Temperature, pH, and dissolved oxygen fluctuations in the ponds are additional significant factors regulating salt pond ecosystems. Dramatic shifts in temperature and/or salinity can influence the ability of the ponds to support aquatic photosynthetic organisms, invertebrate populations, and their predators.

Marine macroalgae such as sea lettuce (*Ulva* spp.), *Enteromorpha* spp., *Cladophora* spp., and sometimes *Fucus* spp. and *Codium* spp. occur in only a few of the lowest salinity ponds, along with some fish and invertebrate species. Fish and most invertebrates cannot survive in the medium- to high-salinity ponds, and the dominant photosynthetic organism of these ponds is a single-celled green algal species, *Dunaliella salina*, which, along with other species of halobacteria, cyanobacteria, dissolved organics, and organic particulates, produces the rich pigments characteristic of the San Francisco Bay salt ponds. Invertebrate species richness declines progressively with increasing salinity, especially above 35 ppt; species abundance also shows an inverse relationship with salinity (WRA 1994, 2007). The invertebrate communities of South Bay salt ponds are characterized by amphipods, decapods, polychaetes, oligochaetes, and mollusks in the lower-salinity ponds, and Franciscan brine shrimp (*Artemia franciscana*), brine flies (*Ephydra* spp. and *Lipochaeta slossonae*), reticulated water boatmen (*Trichocorixa reticulata*), and calanoid copepods in the medium- to high-salinity ponds.

The salt pond invertebrate communities are a significant food source for shorebirds occurring in the ponds. Invertebrate species tolerant of hypersaline brines, including brine shrimp and brine flies, are a key component of the salt pond food web and enable hypersaline salt ponds to serve as quality feeding habitat for shorebirds.

Salt ponds provide important habitat for wildlife, particularly for shorebirds, with lower salinity ponds also providing habitat for waterfowl. Their importance has been recognized by regional agencies, such as BCDC and CDFW, as well as federal agencies such as the USFWS, that have created special policies for the protection and management of salt ponds. Salt ponds contribute to the value of nearby tidal mudflats by providing undisturbed high tide refuge areas and foraging habitat for shorebirds. Over one million shorebirds of 30 species use salt ponds during fall and spring migration (Takekawa et al. 2001) and salt ponds are a valued component of shorebird habitat in San Francisco Bay. The low- to moderate-salinity ponds are also important habitat for migratory and wintering waterfowl. Monthly water bird surveys conducted by the San Francisco Bay Bird Observatory at 22 Cargill-managed salt-evaporation ponds recorded 69 species of birds, including virtually every species of waterbird found in the Bay, that use the salt ponds (SFBBO 2013), and 10,094 California gull nests were documented within Cargill properties in 2019 (SFBBO 2020a). Dry portions of ponds also provide nesting habitat for WSP, American avocet (*Recurvirostra americana*), and California gull (*Larus californicus*).

MSS (bittern) is currently stored in ponds P2-12 and P2-13 (Figure 3.4-1). The salinity and ionic imbalance of these ponds makes them unsuitable habitat for aquatic organisms, and aquatic life is expected to be very sparse or non-existent within these ponds (Siegel and Bachand 2002).

Internal Berms and Inboard Sides of Outboard Berms

Berms were built using native material for the purpose of storing brine for salt production. Cargill currently maintains approximately 123 miles of earthen berms, of which more than 50 miles of berms are outboard and abut the Bay and tidal marsh habitats. The quality of habitat on the earthen berms varies greatly throughout the BSA. The inboard sides of the outboard berms and all internal berms are mostly barren due to high soil salinity. These areas provide roosting and nesting habitat for birds that require an open area devoid of vegetation, including WSP, American avocet, California gull, double-crested cormorants (*Phalacrocorax auritus*), and black-necked stilt (*Himantopus mexicanus*) as well as species whose populations are declining elsewhere, such as Caspian tern (*Sterna caspia*) and Forster's tern (*Sterna forsteri*).

Non-native mammalian predators including red fox (*Vulpes vulpes*) and Norway rat (*Rattus norvegicus*) are the primary invasive wildlife species of concern in the South Bay, have been observed in the vicinity of the Project area, and are assumed to be present (Goals Project 2015). These non-native predators may be present throughout both internal and external areas of the Project area.

3.4.1.2 External Areas - Outboard Sides of Outboard Berms and Adjacent Habitats

Tidal Marsh

Over 90 percent of tidal marsh habitat in the San Francisco Bay has been lost as a result of diking and filling since the mid-1800s (Williams and Faber 2001). The Project area is bordered by roughly 3,500 acres of natural tidal marsh, with the largest areas located at Dumbarton Point, Newark Slough, Mowry Slough, and Greco Island. Most of the outboard berms have tidal marsh vegetation on their outboard sides.

In most areas, the outboard edges of outboard berms have been colonized by marsh species such as pickleweed (*Salicornia virginica*) and alkali heath (*Frankenia salina*). Above the intertidal zone, outboard edges of outboard berms tend to be devoid of vegetation or dominated by non-native vegetation, such as fennel (*Foeniculum vulgare*), wild mustard (*Brassica spp.*), wild radish (*Raphanus sativus*), perennial pepperweed, and various non-native grasses (*Bromus* spp.*, Hordeum marinum, Lolium multiflorum*). Native coyote brush (*Baccharis pilularis*) is sometimes present along less-disturbed upland sections.

The outboard edges of the outboard berms provide refugia for tidal marsh wildlife species, including SMHM and CRR, from high tides and winter storms. Some of the more densely vegetated berms also provide potential nesting habitat for SMHM, as well as tidal marsh associated birds such as salt marsh common yellowthroat (*Geothlypis trichas sinuosa*), Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and most commonly Canada goose (*Branta canadensis*). Unvegetated portions of outboard berms have limited potential to provide nesting habitat for American avocet, black-necked stilt, WSP, Caspian tern, and Forster's tern as these species prefer nesting on interior berms, islands, and dry pond bottoms.

Tidal marsh communities are often discussed in terms of "zones" based on elevation in relation to the tides. Each provides habitat for different plants and animals resulting from differing frequency and duration of tidal flooding at different elevations. Low marshes are generally regularly flooded by daily tides. Low marsh vegetation is almost always dominated by grass-like plants, such as Pacific cordgrass (*Spartina foliosa*). The invasive smooth cordgrass (*Spartina alterniflora*) or its hybrids can also be present within the low marsh zone; however, the San Francisco Estuary Invasive Spartina Project, a coordinated regional effort among local, state, and federal organizations dedicated to preserving California's extraordinary coastal biological resources through the elimination of introduced species of *Spartina* (cordgrass), has significantly decreased the amount of invasive smooth cordgrass and its hybrids (San Francisco Bay Joint Venture 2020). Within the middle marsh zone at slightly higher elevations flooded only by the higher high tides, pickleweed, saltgrass (*Distichlis spicata*), salt marsh dodder (*Cuscuta salina*), fleshy jaumea (*Jaumea carnosa*), alkali heath, and spearscale (*Atriplex triangularis*) occur. Shorebirds, such as willets (*Catoptrophorus semipalmatus*) and marbled godwits (*Limosa fedoa*), rest in pickleweed when their feeding grounds are covered by water at high tide.

High marsh occurs where tidal waters infrequently flood, mostly during spring tides (tides that occur twice a month) during summer and winter, and dominant plants are pickleweed, saltgrass, and marsh gumplant (*Grindelia stricta* var. *angustifolia*). This vegetation provides high water refugial habitat for two marsh-dependent species currently listed as endangered: CRR and SMHM. High marsh zones throughout the Bay Area are often disturbed, resulting in extirpation or reduction in numbers of several plant species as well as widespread invasion by exotic species (WRA 2007).

Northern Coastal Salt Marsh is a highly productive plant community dominated primarily by pickleweed that is found along the edges of San Francisco Bay. Northern Coastal Salt Marsh provides habitat for numerous endangered, threatened, and rare animals and plants. Many exotic plant species threaten northern coastal salt marsh communities and restoration efforts near the BSA. The California Invasive Plant Council (Cal-IPC) rates exotic invasive plants according to their distribution and threat to native ecosystems. Plants with a rating of *High* have severe ecological impacts, those with a *Moderate* rating have apparent but not severe impacts, and those with a rating of *Limited* are invasive but have minor impacts either spatially or ecologically (Cal-IPC 2020).

Smooth cordgrass, its hybrids with the native Pacific cordgrass, perennial pepperweed, and Mediterranean saltwort (*Salsola soda*) rapidly invade coastal marsh habitats and create uniform stands that greatly alter species diversity and ecological processes. Exotic cordgrass and hybrids are of particular concern in the South Bay. However, as mentioned, the San Francisco Estuary Invasive Spartina Project is actively decreasing the amount of invasive smooth cordgrass and its hybrids. Between 2005 and 2015, invasive *Spartina* decreased from 805 to 28 acres Bay-wide in the San Francisco Estuary (Olofson and Rohmer 2016). Smooth cordgrass and perennial pepperweed are rated *High* impact by Cal-IPC. These species are all present within the BSA or in the surrounding coastal marsh. Many other invasive species, including dense-flowered cordgrass (*Spartina densiflora*) (*High*), common cordgrass (*Spartina angelica*) (*Moderate*), and saltmeadow cordgrass (*Spartina patens*) (*Limited*), are present in Bay coastal marshes and are potential species of concern (WRA 2007). Infestations by invasive plant species such as perennial pepperweed and others can alter habitat to the extent that it is no longer suitable for native species, including the SMHM, CRR, and California black rail (*Laterallus jamaicensis coturniculus*).

Disturbance is a contributing factor to the introduction and spread of invasive plants and has occurred in and around the BSA for over a century. The BMPs described in Section 2.13 were developed by Cargill to reduce such disturbance, to halt potential future spread of invasive plants caused by maintenance activities, and to encourage the rapid reestablishment of native species.

Intertidal Mudflat

There are approximately 15,000 acres of intertidal mudflat in South San Francisco Bay. Mudflats are found outside many salt pond berms from approximately 3 feet below mean sea level (MSL) to 1 foot above MSL. The deposition of sediments forming bay mud in South San Francisco Bay has been a continuous process. Where sediments are inundated by high tides and exposed at low tides, they form broad, almost level mud flats. The mud is composed of clay, sand, silt, organic matter, and shell fragments.

The primary producers (organisms that can convert light or chemical energy into organic matter) native to intertidal mudflats are represented by three groups: benthic microalgae, phytoplankton, and benthic macroalgae. Species abundance and composition is dependent upon localized turbidity, water depth, light levels, and salinity levels. Mudflats provide habitat for three major groups of invertebrates: organisms that live primarily in the muds (benthic infauna); those that live on the surface of the mudflats or attached to other objects, animals, or plants (epifauna); and those living in the water column (pelagic fauna).

Tidal Open Water

Tidal open waters within the South Bay, including tidal sloughs and channels and areas of open water within and between salt ponds and marshes, support a diversity of benthic invertebrates, pelagic invertebrates, and fish species. While not all species reported in the South Bay may occur in the BSA, there is potential for occurrence of many of these species in varying distributions and abundance. Outside of the salt ponds, South San Francisco Bay and the major sloughs include areas where open water is present regardless of tidal level.

CDFW has conducted fishery surveys since 1980 for the San Francisco Bay Study (CDFW 2020a). These surveys include data from multiple stations in the South Bay. Data between 1980 and 2006 reported that 71 native fish species were collected in the South Bay region (Swanson 2007). The most common fish species of the South Bay include Bay pipefish (*Syngnathus leptorhynchus*), three-spined stickleback (*Gasterosteus aculeatus*), northern anchovy (*Engraulis mordax*), topsmelt silverside (*Atherinops affinis*), Pacific staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and yellowfin goby (*Acanthogobius flavimanus*) (Sfbaywildlife.info 2020). The tidal sloughs and channels also serve as important nurseries and feeding areas for estuarine resident fish.

Tidal open waters in the South Bay also include Habitat Areas of Particular Concern (HAPCs) under Essential Fish Habitat (EFH) as designated by the Pacific Fisheries Management Council (NMFS 2020a). These include the Estuary and Seagrass HAPCs for Pacific Groundfish species, and Marine and Estuarine Submerged Aquatic Vegetation for Pacific Coast Salmon. The tidal open water habitat within the BSA meets the definition of estuary as defined by NMFS. A small patch of eelgrass (*Zostera marina*) was identified during a survey in 2009 immediately south of the mouth of Alameda Creek, and just west of Pond 2A in Plant 1 (Merkel 2009). During a follow up survey in 2014 for the Baywide Eelgrass Survey, no eelgrass was mapped in this area (Merkel 2014). Even if it were present, this small patch of eelgrass is outside of the Project area.

Wildlife Movement and Migration Corridors

Stretches of wildlife habitat that join two larger, otherwise separated, habitat areas often serve as important corridors for wildlife movement. Topography and other natural factors, in combination with urbanization, have fragmented or separated large open-space areas. The fragmentation of natural habitat creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations of plants or animals, and can adversely affect genetic and species diversity. Areas of suitable habitat create movement corridors that avoid and/or minimize the effects of fragmentation by allowing animals to move between remaining habitats.

The San Francisco Bay adjacent to the BSA serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to South San Francisco Bay including Alameda Creek. San Francisco Bay is also an important stopover for migratory shorebirds along the Pacific Flyway (Stenzel et al. 2002). Open water within the Bay provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation such as those within the adjacent Don Edwards San Francisco Bay National Wildlife Refuge provide habitat for many species. Cargill’s operating salt ponds contribute to the integrity of the wildlife movement functions of Bayshore areas in the South Bay.

3.4.2 Special-Status Species

3.4.2.1 Methods

This section summarizes the methods used to identify biological resources and analyze potential impacts, including waters, wetlands, and special-status plants and wildlife.

As used in this document, special-status plants are those species that met one or more of the following criteria:

- Listed, proposed for listing, or candidate for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal Regulations [CFR] 17.11 for wildlife; 50 CFR 17.12 for plants; 67 Federal Register 40658 for candidates) and various notices in the Federal Register for proposed species)
- Listed under the California Endangered Species Act (CESA) as threatened or endangered, proposed, or candidate for listing
- Designated as rare under the Native Plant Protection Act
- Species that otherwise meet the definition of rare, threatened, or endangered species under CEQA Guidelines § 15380; this includes species listed by the California Native Plant

Society (CNPS) in the online version of its *Inventory of Rare and Endangered Plants of California* (CNPS 2020) as List 1A, 1B, 2A, 2B, 3, or 4

Special-status wildlife include species that meet one or more of the following criteria:

- Listed, proposed for listing, or candidate for listing as threatened or endangered under FESA
- Listed or candidate for listing as threatened or endangered under CESA
- Designated as Species of Special Concern or a Fully Protected Species by CDFW
- Species that otherwise meet the definition of rare, threatened, or endangered species under CEQA Guidelines § 15380
- Species covered under the Marine Mammal Protection Act (MMPA) of 1972

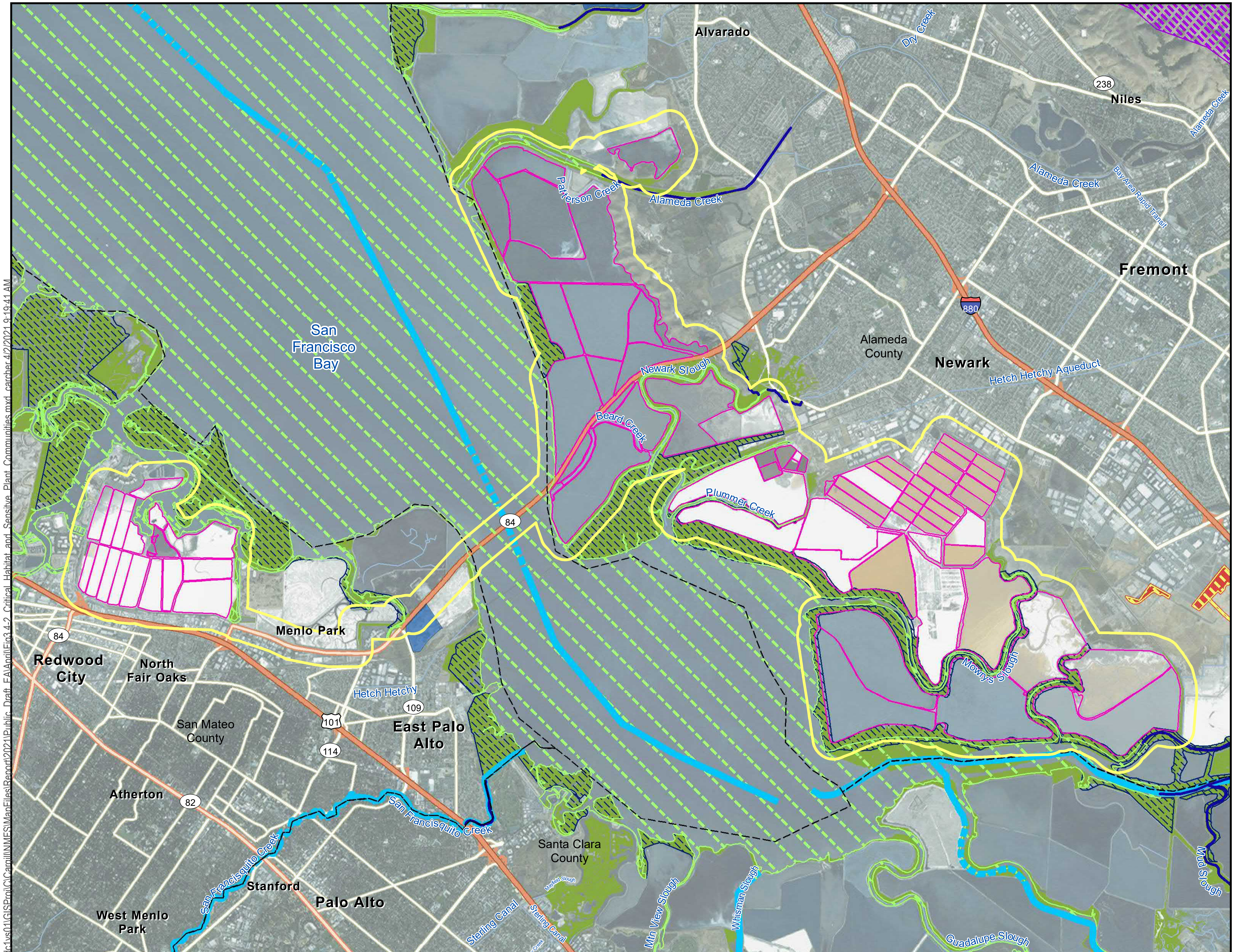
Natural communities were considered to be of special status if they are identified on the CDFW List of Vegetation Alliances and Associations as being critically imperiled, imperiled, or vulnerable, which correspond to CDFW ranks S1, S2, and S3 respectively (California Natural Diversity Database [CNDDB]; CDFW 2020b).

Database and Literature Review

A list of endangered, threatened, proposed for listing, and candidate species with potential to occur within the BSA, along with other resources such as critical habitats, was generated from USFWS's Information for Planning and Consultation website (USFWS 2020a, 2020b). Critical habitat for federally listed species and sensitive plant communities is shown on Figure 3.4-2. Essential Fish Habitat (EFH) is shown on Figure 3.4-3. Additionally, a list of special-status plant and wildlife species that could occur in the BSA was developed through queries of the CNDDB for a 2-mile radius around the Project; the CNPS Electronic Inventory and the NMFS California Species List Tool within the Redwood Point, Newark, Palo Alto, Mountain View, and Milpitas U.S. Geological Survey (USGS) 7.5-minute quadrangles; and the USFWS Comprehensive Conservation Plan (CCP) (CDFW 2020b; CNPS 2020; NMFS 2020b; USFWS 2012a). Appendix E includes brief summaries and assessments for all special-status species identified in the database and literature reviews. Tables 3.4-1 and 3.4-2 in Sections 3.4.2.2 and 3.4.2.3, respectively, summarize the information from Appendix E and focus only on those species that have the potential to occur within the BSA.

Likelihood of Presence for Special-Status Species

The likelihood of special-status species occurrence in the BSA was determined based on natural history parameters, including, but not limited to, the species' range, habitat, foraging needs, migration routes, and reproductive requirements, using the following general categories:



Legend

- Biological Study Area
- System Ponds
- Tidal Marsh

Critical Habitat

- Alameda whipsnake (=striped racer)
- Contra Costa goldfields
- Vernal pool tadpole shrimp
- Western snowy plover
- Green Sturgeon Critical Habitat Estuaries
- Green Sturgeon Critical Habitat Marsh Areas
- Green Sturgeon Critical Habitat Streams
- Steelhead

Source:
Critical Habitat from USFWS
Tidal Marsh from California Aquatic Resources Inventory (CARI)
Valley Oak Woodland from The Conservation Lands Network 2.0

Note:
Service Layer Credits: ESRI, National Geographic

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Figure 3.4-2
Designated Critical Habitat and Sensitive Plant Communities
Cargill
Alameda and San Mateo Counties, CA

Jacobs

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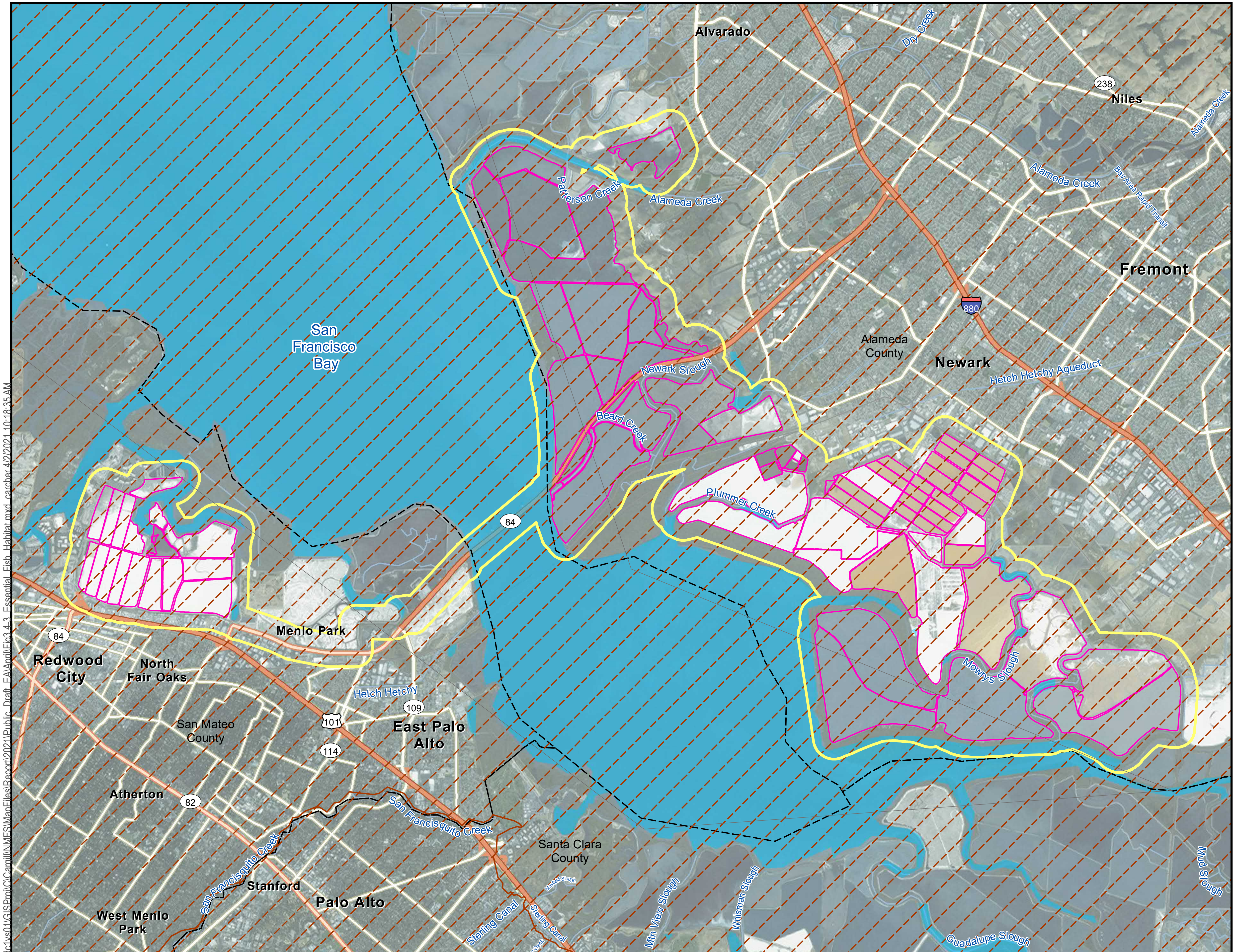

Legend

Biological Study Area

System Ponds

Essential Fish Habitat

Pacific Coast Salmonids

Coastal Pelagic Species and Pacific Coast Groundfish.

Source:
Essential Fish Habitat from USFWS

Note:
Service Layer Credits: ESRI, National Geographic

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Figure 3.4-3
Essential Fish Habitat
Cargill
Alameda and San Mateo Counties, CA

Jacobs

\\dc1vs01\GISProj\C\Cargill\NMFS\MapFiles\Report\2021\Public_Draft_EA\April\Fig3.4-3_Essential_Fish_Habitat.mxd carcher 4/2/2021 10:18:35 AM

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- *Present* – Reconnaissance-level, focused, or protocol-level surveys documented the occurrence or observation of a species in the BSA.
- *Seasonally present* – Individuals were observed in the BSA only during certain times of the year.
- *Likely to occur (onsite, or offsite where the species may be affected by the Project [e.g., from noise, dust, lighting, hydrological modifications, etc.])* – The species has a strong likelihood to be found in the BSA (or offsite and potentially subject to Project impacts) prior to or during maintenance activities, but has not been directly observed to date during Project surveys. The likelihood that a species may occur is based on the following considerations: suitable habitat that meets the life history requirements of the species is present on or near the BSA; migration routes or corridors are near or within the BSA; records of sighting are documented in or near the BSA; and invasive predators (e.g., red fox) are absent. The main criteria for this category are that records of occurrence have been documented within or near the BSA, the BSA falls within the range of the species, and suitable habitat is present but it is undetermined whether the habitat is currently occupied.
- *Potential to occur* – There is a possibility that the species can be found in the BSA or is potentially subject to Project impacts prior to or during maintenance activities, but it has not been directly observed to date. The likelihood that a species may occur is based on the following conditions: suitable habitat that meets the life history requirements of the species is present in or near the BSA; migration routes or corridors are near or within the BSA; and there is an absence of invasive predators (e.g., red fox). The main criteria are that the BSA falls within the range of the species and suitable habitat is present, but no records of sighting are located within or near the BSA and it is undetermined whether the habitat is currently occupied.
- *Unlikely to occur* – The species is not likely to occur in the BSA or be potentially subject to Project impacts based on the following considerations: lack of suitable habitat and features in the BSA that are required to satisfy the life history requirements of the species (e.g., absence of foraging habitat; lack of reproductive areas, and lack of sheltering areas); presence of barriers to migration/dispersal; presence of predators or invasive species that inhibit survival or occupation (e.g., the presence of bullfrogs or invasive fishes); or lack of hibernation areas or estivation areas onsite.
- *Absent* – Suitable habitat does not exist in the BSA where the species would be potentially subject to Project impacts, the species is restricted to or known to be present only within a specific area outside of the BSA, and/or focused or protocol-level surveys did not detect the species.

The likelihood of presence and environmental information is detailed in Appendix E. The following subsections summarize the information from Appendix E and focus only on those species that have the potential to occur in the BSA.

3.4.2.2 Special-Status Plant Species

Forty-four special-status plant species were identified in the CNDDB, CNPS, and USFWS records searches (Appendix E). However, only three species, brittlescale (*Atriplex depressa*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), and San Joaquin spearscale (*Extriplex joaquinana*) have the potential to occur in and adjacent to the BSA due to the presence of potentially suitable habitat. These species are described in further detail in Table 3.4-1. The remaining species were determined absent or unlikely to occur because the BSA and adjacent potentially indirectly impacted areas lack suitable habitat.

Table 3.4-1. Special-Status Plant Species with Potential to Occur in the Biological Study Area

Scientific Name/ Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Potential for Occurrence
Atriplex depressa/ brittlescale	--	--	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Grows in alkaline, clay soils.	Apr-Oct	**Potential to occur.** Playa habitat is present within the BSA. One CNDDB occurrence within 2 miles of the BSA.
Centromadia parryi ssp. *congdonii*/ Congdon's tarplant	--	--	1B.1	Valley and foothill grassland. Grows in alkaline soils.	May-Oct (Nov)	**Potential to occur.** There is potentially suitable habitat within the external areas on the outboard side of outboard berms where maintenance or access work infrequently occur. Five CNDDB occurrences within 2 miles of the BSA.
Extriplex joaquinana/ San Joaquin spearscale	--	--	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Grows in alkaline soils.	Apr-Oct	**Potential to occur.** Playa habitat is present within the BSA. Two CNDDB occurrences within 2 miles of the BSA.

[a]Status designations are as follows:
<u>CNPS California Rare Plant Rank (CRPR)</u>:
(1B) Rare, threatened, or endangered in California and elsewhere
<u>Threat Rank</u>:
0.1 Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 Fairly threatened in California (20 to 80% of occurrences threatened/moderate degree and immediacy of threat)
Sources:
USFWS 2020a; CDFW 2020b; CNPS 2020

<u>Brittlescale</u>

Brittlescale is a CNPS List 1B.2 plant that blooms from April through October and occurs in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools.

Potentially suitable conditions exist along berms, locks and access cuts, and tidal marsh habitat within and around the BSA (Figure 3.4-1). There is one CNDDB occurrence within 2 miles of the BSA.

Congdon's Tarplant
Congdon's tarplant is a CNPS List 1B.1 plant that blooms from May through November and occurs in valley and foothill grasslands in alkaline soils. Potentially suitable conditions exist along upland portions of locks and access cuts, upland areas along the berms, and other upland internal and external areas of the Project (Figure 3.4-1). There are five CNDDB occurrences within 2 miles of the BSA.

San Joaquin Spearscale
San Joaquin spearscale is a CNPS List 1B.2 plant that blooms from April through October and occurs in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland in alkaline soils. Potentially suitable conditions exist along upland portions of dredge locks and access cuts, upland areas along the berms, and other upland internal and external areas of the Project (Figure 3.4-1). There are two CNDDB occurrence within 2 miles of the BSA.

Sensitive Plant Communities
The CNDDB sensitive plant community Northern Coastal Salt Marsh is within the BSA (Figure 3.4-2). Northern Coastal Salt Marsh is found on the outboard side of many outboard berms, wherever tidal action and elevation are adequate to support this community type. The plant that is most characteristic of Northern Coastal Salt Marsh is pickleweed. This succulent, salt-tolerant perennial forms a dense canopy over large expanses in the Bay. Other commonly encountered native plants include Pacific cordgrass, alkali heath, saltgrass, salt marsh dodder, fleshy jaumea, sea lavender (*Limonium californicum*), and marsh gumplant, among many others.

3.4.2.3 Special-Status Wildlife Species

Thirty-nine special-status wildlife species were identified in the CNDDB, CNPS, NMFS, and USFWS records searches (Appendix E). However, suitable habitat for only 22 of the 39 species was identified in the BSA. Species that were identified as being present in or having a potential to occur in the BSA are further detailed in Table 3.4-2.

Table 3.4-2. Special-Status Wildlife Species with Potential to Occur in the Biological Study Area

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
Fish	*Acipenser medirostris/* green sturgeon	T	--	--	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento River. Spawns at temps between 8-14° C. Preferred spawning substrate is large cobble but can range from clean sand to bedrock.	**Potential to occur**. Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the BSA. The BSA is within designated critical habitat. Sturgeon have the potential to be present within the BSA year-round.
	Oncorhynchus mykiss irideus/ steelhead -- central California coast Distinct Population Segment	T	--	--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**Seasonally present**. Suitable habitat is present, and species is known to be present in open water of the BSA; however, this species is unlikely to occur between July and October. One CNDDB occurrence within 2 miles of the BSA.
	Spirinchus thaleichthys/ longfin smelt	C	T	--	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	**Potential to occur.** There is potentially suitable habitat within aquatic habitat in the external areas of the BSA, where maintenance or access work infrequently occurs. The San Francisco Bay Study has not detected this species near the BSA in recent years (CDFW 2020a), but the species was recently found in restored salt marsh habitat in the Coyote Creek Watershed immediately south of the BSA (Lewis et al. 2020). Based on temperature data collected between 2018 and 2020, the average water temperature at the intakes were above 22°C (72°F) between June and August (WRA 2020a), and this is above the upper temperature range typically inhabited by this species (Hobbs 2018), making it unlikely for this species to be present in the vicinity of the intake pumps during this period.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
Birds	*Agelaius tricolor/* tricolored blackbird	--	T	SSC	Requires open water, protected nesting substrate which may also occur in uplands, and foraging area with insect prey within a couple miles of the colony.	**Potential to occur**. Marginally suitable foraging habitat is present within the external areas of the BSA. Four CNDDB occurrences within 2 miles of the BSA.
	Asio flammeus/ short-eared owl	--	--	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	**Present** Suitable foraging habitat is present within the external areas of the BSA. Species documented by USFWS during Ridgway's rail survey at Newark Plant in 2019.
	Athene cunicularia/ burrowing owl	--	--	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential to occur**. Suitable foraging habitat is present within outboard berms and other upland areas within the BSA. Ten CNDDB occurrences within 2 miles of the BSA.
	Charadrius alexandrinus nivosus/ western snowy plover	T	--	SSC	Sandy beaches, salt pond berms and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Present**. Suitable foraging and nesting habitat is present within the BSA and this species is known to occur at berms and intertidal mudflats within the BSA. Eight CNDDB occurrences within 2 miles of the BSA.
	Circus cyaneus/ northern harrier	--	--	SSC	Coastal salt and freshwater marshes, nesting and foraging habitats in grasslands, agricultural fields, and high marsh.	**Present**. Suitable foraging habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Five CNDDB occurrences within 2 miles of the BSA.
	Elanus leucurus/ white-tailed kite	--	--	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	**Present**. Suitable foraging habitat is present within the BSA and this species has been observed within the BSA. Presence within the BSA would likely be limited to fly overs or foraging and not nesting because the BSA lacks suitable trees for nesting. Six CNDDB occurrences within 2 miles of the BSA.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Falco peregrinus anatum/ American peregrine falcon	DL	DL	FP	Wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**Present.** Suitable foraging habitat is present within the BSA. Have been observed annually by USFWS at the Newark Plant.
	Geothlypis trichas sinuosa/ salt marsh common yellowthroat	--	--	SSC	Resident of the San Francisco Bay region, in freshwater and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Suitable habitat is present within tidal marsh in the external areas of Project and may transit or forage in other parts of the BSA. Eight CNDDB occurrences within 2 miles of the BSA.
	Lanius ludovicianus/ loggerhead shrike	-	-	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes.	**Potential to occur.** Suitable foraging habitat is present within the BSA.
	Laterallus jamaicensis coturniculus/ California black rail	--	T	FP	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs dense vegetation for nesting habitat.	**Present.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Eleven CNDDB occurrences within 2 miles of the BSA.
	Melospiza melodia pusillula/ Alameda song sparrow	--	--	SSC	Resident of salt marshes bordering south arm of San Francisco bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Fourteen CNDDB occurrences within 2 miles of the BSA.
	Pelecanus occidentalis californicus/ California brown pelican	DL	DL	FP	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	**Likely to occur.** Suitable foraging habitat is present in external areas and a limited number of internal portions of the BSA. Nesting habitat is not present within the BSA as the BSA is outside of its nesting range.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
	Rallus obsoletus obsoletus/ California Ridgway's rail	E	E	FP	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Thirteen CNDDB occurrences within 2 miles of the BSA.
	Rynchops niger/ black skimmer	--	--	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	**Likely to occur.** Suitable habitat is present in external areas and a limited number of internal portions of the Project.
	Sternula antillarum browni/ California least tern	E	E	FP	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	**Present.** The species is known to forage within the BSA. No nesting occurs in the BSA. Five CNDDB occurrences within 2 miles of the BSA.
Mammals	*Reithrodontomys raviventris* (southern subspecies; *R. r. raviventris)*/ salt marsh harvest mouse	E	E	FP	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Present**. Suitable habitat is present within the BSA and this species is presumed to occur in tidal marsh habitat within the BSA. Species has been documented in Newark Plants 1 and 2 by USFWS and confirmed via genetic testing by UC Davis. Twenty-six CNDDB occurrences within 2 miles of the BSA.
	Sorex vagrans halicoetes/ salt marsh wandering shrew	--	--	SSC	Salt marshes of the south arm of San Francisco Bay.	**Likely to occur**. Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Five CNDDB occurrences within 2 miles of the BSA.

Category	Scientific Name/ Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Potential for Occurrence
Marine Mammals	*Phoca vitulina richardsi*/ Pacific harbor seal	MMPA	--	--	Favor near-shore coastal waters and are often seen on rocky islands, sandy beaches, mudflats, bays, and estuaries. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.	**Present**. Suitable habitat is present within the external areas of the BSA and this species is known to occur within the open water and intertidal mudflat habitat of the BSA. A pupping site is known to be present along Mowry Slough and Newark Slough.
	Zalophus californianus/ California sea lion	MMPA	--	--	Shallow waters of the eastern North Pacific Ocean. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding. Noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest.	**Present.** Suitable habitat is present within the external areas of the BSA and this species is known to occur. There are no known haul-out locations in the BSA.

[a]Status designations are as follows:
Federal Designations:
(E) Federally Endangered, (T) Federally Threatened, (C) Candidate, (DL) Federally Delisted, (MMPA) Marine Mammal Protection Act
State Designations:
(E) State Endangered, (T) State Threatened, (DL) State Delisted
California Department of Fish and Wildlife (CDFW) Designations:
(SSC) Species of Special Concern, (FP) Fully Protected
Sources:
CDFW 2019; CDFW 2020a; CDFW 2020b; NMFS 2020a; USFWS 2020

Fish

Green Sturgeon

The federally threatened southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris*) is designated as populations originating from coastal watersheds south of the Eel River (California), where the only known spawning population is in the Sacramento River (50 CFR part 226).

The life cycle of southern DPS green sturgeon can be broken into four distinct phases based on developmental stage and habitat use: (1) larvae and post-larvae less than 10 months of age; (2) juveniles less than or equal to 3 or 4 years of age; (3) coastal migrant females between 3 or 4 and 13, and males between 3 or 4 and 9 years of age; and (4) adult females greater than or equal to 13 years of age and males greater than or equal to 9 years of age (Nakamoto et al. 1995).

Southern DPS green sturgeon adults typically begin their upstream spawning migrations into the San Francisco Bay by late February to early March, and spawn between March and July (Heublein et al. 2009) in the Sacramento River (Moyle 2002, Erickson el al. 2002, Farr and Kern 2005). Therefore, there is no southern DPS green sturgeon spawning habitat within the BSA. During the late summer and early fall, juveniles, subadults, and non-spawning adult green sturgeon frequently can be found aggregating in estuaries along the Pacific coast (Emmett el al. 1991), like the San Francisco Bay. Green sturgeon migrating between the Pacific Ocean and spawning habitat in the Sacramento River watershed rarely travel south of the San Francisco–Oakland Bay Bridge. Typically, adults take a more direct route from San Pablo Bay, passing through Raccoon Strait adjacent to Angel Island, and out to the Pacific Ocean (Kelly et al. 2007). However, juveniles and adults are presumed present year-round in all parts of the San Francisco Bay, including the South San Francisco Bay (Monaco et al. 1990, Israel and Klimley 2008). The entire San Francisco Bay is designated as critical habitat for green sturgeon (Figure 3.4-2). Green sturgeon are benthic feeders that often forage over intertidal mudflats (Moser et. al 2016); therefore, suitable foraging habitat exists within the BSA.

This species is not regularly encountered during scientific surveys in the San Francisco Bay (Heublein et al. 2017), and few data and studies exist on the species in the South San Francisco Bay. Similarly, there are little to no available data on fish assemblages in the sloughs within the BSA; however, two sampling programs regularly sample areas in the vicinity. The San Francisco Bay Study (Bay Study) has been sampling since 1980 and uses a midwater trawl and an otter trawl to sample 52 stations, 3 of which (Stations 101, 102, and 140) are within 11 miles of Cargill's intakes; no green sturgeon were captured in this study (CDFW 2020a). Additionally, sampling performed by the Hobbs Biogeochemistry and Fish Ecology Laboratory (Hobbs Lab) within the Alviso Marsh Complex (a series of marshes and sloughs similar to those surrounding and within the BSA) has been conducted continuously each month since 2010 (Lewis and Hobbs 2018). Over the course this sampling, no green sturgeon were captured.

Note that juvenile, subadult, and adult green sturgeon are rarely caught in the type of trawls used in the Bay Study and the Hobbs Lab studies, and they may be completely absent from all monitoring throughout the San Francisco Bay in some years (Heublein et al. 2017). Therefore, these data likely do not provide a complete picture on abundance and presence of the species in the South San Francisco Bay. Studies that target juvenile, subadult, and adult sturgeon, such as the CDFW Sturgeon Study, which uses trammel nets, have only been conducted in the San Pablo and Suisun bays; data from studies utilizing these more effective survey methods in the South San Francisco Bay are not available. Green sturgeon are assumed to forage in the South Bay (Heublein pers. comm. 2020). Similarly, commercial fishing does not occur at large levels in the South San Francisco Bay, so bycatch data are not available.

Because of the difficulty in sampling for this species as described, the presence of foraging juvenile, subadult, and adult sturgeon year round in the vicinity of the BSA cannot be ruled out. However, no spawning is expected in the South San Francisco Bay or its tributaries.

Steelhead

The federally threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) DPS includes all naturally spawned populations of steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin. The Project area is within critical habitat for steelhead which includes the South San Francisco Bay (Figure 3.4-2).

Steelhead are anadromous, spending some time in both freshwater and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby et al. 1996). Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles remain in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Barnhart 1986, Busby et al. 1996, McEwan 2001). Although variation occurs, steelhead usually live in freshwater for 2 years, then spend 1 or 2 years in the ocean before returning to their natal stream to spawn.

Tributaries where CCC steelhead are known to spawn and rear include San Francisquito Creek (which reaches the Bay approximately 3.5 miles southeast of the Redwood City Plant), Stevens Creek (which reaches the Bay approximately 6.5 miles southeast of the Redwood City Plant), and Guadalupe River and Coyote Creek (which converge and reach the Bay less than a mile southeast of Newark Plant 2). Alameda Creek does not currently support a FESA-protected run of CCC steelhead due to significant barriers blocking access to spawning habitat.

Data on CCC steelhead abundance in San Francisco Bay, and to a greater extent South San Francisco Bay, are limited. However, estimates put the number of adult CCC steelhead within the entire Bay per year at approximately 14,100 (NMFS 2006), with local populations near the BSA presumably representing only a small percentage of this number due to fewer creeks with spawning habitat available to steelhead in the South Bay.

Steelhead from the tributaries of San Francisco Bay typically migrate to freshwater between November and April, peaking in January and February. They migrate to the ocean as juveniles from March through June, with peak migration occurring in April and May (Fukushima and Lesh

1998). Steelhead fry generally rear in edgewater habitats within natal streams and move gradually into pools and riffles as they grow larger. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjorn 1991). However, steelhead tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Rearing steelhead juveniles prefer water temperatures of 7.2 to 14.4 degrees Celsius (°C) (45.0 to 57.9°F) and have an upper lethal limit of 23.9°C (75.0°F) (Barnhart 1986, Moyle 2002). They can survive in water up to 27°C (80.6°F) with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby et al. 1996).

Juvenile steelhead emigrate episodically from natal streams during fall, winter, and spring high flows. Emigrating steelhead use the lower reaches rivers and estuaries for rearing and as a migration corridor to the ocean. Juvenile steelhead migrate downstream during most months of the year, but the peak period of emigration occurs in the spring, with a much smaller peak in the fall. Chapman et al. (2015) found that Central Valley steelhead transit the San Francisco Bay in 2 to 4 days and do not feed, rear, or undergo smoltification in the Bay. Because of their similar life history strategies, it is likely that Central California Coast steelhead have a similar migratory strategy. In addition, a large outmigration study focusing on residency timing, transit time, and channel preference for steelhead smolts was conducted in the North San Francisco Bay, and results shows that steelhead averaged 2.5 days traveling through the San Pablo and San Francisco Bays, and exhibited an average transit time (time spent in any one location) of 31.6 minutes (Klimley 2009). A positive correlation between steelhead smolt detections and water depth has been observed; generally the deeper the water, the higher the probability of detection, within a range of 3 to 37 feet, indicating that these fish favor deeper channels, rather than shallower waters (Klimley 2009).

Based on preliminary salinity data collected by WRA, the water intakes off of Alameda Creek, Mowry Slough, Newark Slough, Plummer Slough, and First Slough are brackish, and adjacent Bay water is saline (WRA 2020b). As such, aquatic habitat in the vicinity of the BSA does not support spawning or rearing. However, the external aquatic portions of the BSA do contain suitable foraging habitat and natural cover, and may serve as migratory corridors. These areas are primarily associated with Mowry Slough and Alameda Creek. Although the section of Alameda Creek associated with the Coyote Intake contains suitable foraging and migration habitat, the side channel that runs between the main channel and the intake is much shallower than the main channel, making it less likely that steelhead would exit the main channel to use the side channel.

Waters at Cargill's intakes are generally shallower than those of the open San Francisco Bay, making it less likely that steelhead would be present within the surrounding sloughs and creeks, especially given the lack of upstream spawning habitat, reducing the natural draw for steelhead to use the surrounding sloughs and creeks.

Since 2000, the Bay Study showed zero detections of steelhead at Bay Study stations 101, 102, and 140 (CDFW 2020a). There were 2,307 combined midwater and otter trawl tows conducted at these three stations between 2000 and 2018. Additionally, sampling performed by the Hobbs Lab within the Alviso Marsh Complex has detected no steelhead over the course of 1,669 sampling tows. In total, 78,863 individual fish of other species were encountered during the sampling tows. The lack of detections of steelhead in and around the BSA over decades of sampling indicate that it is unlikely that steelhead occur in the sloughs within the BSA.

In 2012, a fish ladder was approved for Alameda Creek that will enable fish to migrate upstream and over a large concrete barrier that protects the Bay Area Rapid Transit and Union Pacific Railroad tracks footings from erosion. Since then, additional fish passage improvements have been approved and are under construction. These projects are intended to restore spawning to Alameda Creek, and may also locally increase the CCC steelhead population.

Despite the seasonality of steelhead presence in San Francisco Bay, short residence and transit times, lack of detections by sampling efforts, and deeper water preferences, steelhead may be seasonally present in the BSA between approximately November and June, but individuals are expected to transit through the BSA quickly.

Longfin Smelt

The longfin smelt (*Spirinchus thaleichthys*), listed as state threatened and federal candidate species, is a small, slender-bodied pelagic fish. This species typically measures approximately 3 inches in length as adults and generally live for 2 years, although some 3-year-old smelt have been observed. Juveniles and pre-spawning adults reside in the more saline habitats within San Pablo Bay and central San Francisco Bay during a majority of their life (Kelly et al. 2007).

Longfin smelt are primarily an open water fish species, except for in the larval stage, and inhabit the middle to lower water column. Movement patterns based on CDFW fishery sampling and other studies suggest that longfin smelt actively avoid water temperatures greater than 22°C (72°F) (Baxter et al. 1999, Hobbs and Moyle 2015). Adult longfin smelt are primarily present throughout the San Francisco Bay during the late summer months, generally concentrated in Suisun and San Pablo Bays, before migrating upstream to spawn in late winter (Merz et al. 2013).

Spawning occurs from November through May, peaking from February through April in the San Francisco Bay Delta (Moyle 2002, USFWS 2012c).

Their eggs are adhesive and deposited on sand, gravel, rocks, submerged aquatic vegetation, and other hard substrates during spawning. After hatching, the young are planktonic; they are transported into the western Delta and Suisun Bay during the late winter and spring where juveniles rear.

Longfin smelt adults are captured on occasion at the three closest stations for CDFW's Bay Study, all of which are within 11 miles of Cargill's intakes; however, they are captured in much greater numbers in the Suisun, San Pablo, and North San Francisco bays (CDFW 2020a).

A recent study, conducted from 2011 to 2019, in the marshes and sloughs associated with the Coyote Creek watershed between October and April found persistent and occasionally dense aggregations of adult longfin smelt, some of which were in late-stage spawning condition. In addition, post-larval recruits were observed in April through May of 2017 and 2019; these years were characterized by high precipitation and freshwater outflow, and as such, the marshes in the area experienced persistent low-salinity spawning and rearing habitat. Thus, there appears to be potential for spawning in Coyote Creek Watershed immediately south of the BSA in all years, but recruitment success is limited by freshwater outflow (Lewis et al. 2020). The highest catches of recruits and adults were often within shallow, recently restored tidal marshes and adjacent sloughs.

There are suitable tidal marshes within the BSA, and as such, longfin smelt have the potential to occur. However, given that documented occurrences in the area are largely in proximity to restored salt marsh habitat or in open Bay habitat, and that the water intakes are largely in channelized sloughs with limited fringing salt marsh habitat, the potential for occurrence is decreased. This occurrence potential is also similarly decreased by the temperature preferences for longfin smelt. Water temperature data taken at the Dumbarton Bridge USGS station indicate that the upper part of the water column consistently stays above 22°C (72°F) between approximately July and mid-September (USGS 2018). Additionally, water temperature data at Alviso Slough, approximately 8 miles from the BSA, showed an average temperature of 20.4°C (69°F) between May and November; this temperature is in the upper range for this species (Hobbs 2018).

Temperature data were collected within the areas of Cargill's intakes between October of 2018 and August of 2020. These stations measured average monthly temperatures consistently at or above 22°C (72°F) during June, July and August at all intakes, and above 22°C (72°F) during September 2019 at half of the intakes (WRA 2020a). Similarly, average monthly water temperatures during April and May are at the upper range of temperatures inhabited by longfin smelt, and it is unlikely that longfin smelt would remain present persistently under those conditions.

Managed U.S. Fisheries Species

Under the Magnuson-Stevens Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), the NMFS, Fishery Management Councils, and federal agencies are required to cooperatively protect Essential Fish Habitat for commercially important fish species, such as Pacific coast groundfish, three species of salmon, and five species of coastal pelagic fish and squid. As defined by the U.S. Congress, EFH includes "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The entire central San Francisco Bay is considered generally to provide EFH for the species listed in Table 3.4-3, as these fish species are included in fish management plans prepared by regional Fishery Management Councils under the Magnuson-Stevens Act. Figure 3.4-3 shows EFH in and around the BSA.

Table 3.4-3. Managed Fish Species in San Francisco Bay under the Magnuson-Stevens Act

Fisheries Management Plan	Common Name	Scientific Name	Life Stage	Abundance
Coastal Pelagic	Northern anchovy	*Engraulis mordax*	J, A	Abundant
	Jack mackerel	*Trachurus symmetricus*	E, L	Present
	Pacific sardine	*Sardinops sagax*	J, A	Present
Pacific Groundfish	English sole	*Parophrys vetulus*	J, A	Abundant
	Sand sole	*Psettichthys melanostictus*	L, J, A	Present
	Curlfin sole	*Pleuronichthys decurrens*	J	Rare
	Pacific sanddab	*Citharichthys sordidus*	E, L, J, A	Present
	Starry flounder	*Platichthys stellatus*	J, A	Present
	Lingcod	*Ophiodon elongatus*	J, A	Present
	Brown rockfish	*Sebastes auriculatus*	J	Present
	Pacific whiting (hake)	*Merluccius productus*	E, L	Present
	Kelp greenling	*Hexagrammos decagrammus*	J, A	Present
	Leopard shark	*Triakis semifasciata*	J, A	Present
	Spiny dogfish	*Squalus acanthias*	J, A	Present
	Skates	*Raja* ssp.	J, A	Present
	Soupfin shark	*Galeorhinus galeus*	J, A	Rare
	Bocaccio	*Sebastes paucispinis*	J	Rare
	Cabezon	*Scorpaenichthys marmoratus*	J	Present
Pacific Coast Salmon	Chinook salmon	*Oncorhynchus tshawytscha*	J, A	Seasonally Present
	Coho salmon	*Oncorhynchus kisutch*	J, A	Historically Present, but now considered extirpated (Williams et al. 2011)

Notes: A = Adult; J = Juvenile; L = Larvae; E = Egg
Sources: NMFS 2001, and Interagency Ecological Program for the San Francisco Bay Estuary (IEP), *San Francisco Bay Study, 2005-2009,* unpublished raw midwater trawl data, 2005-2009.

Birds

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is state listed as threatened (CDFW 2020). Individuals of the species nest in wetlands and triticale (a type of grain) fields, near stock ponds, and in irrigated pastures. Foraging habitats include cultivated fields, feedlots associated with dairy farms, and wetlands. They now nest almost exclusively in triticale fields, especially those with invasive mustard or mallow plants. Females select the nesting site within a male's territory, typically close to freshwater, with plenty of concealing vegetation. Females build nests in vegetation from just above ground level up to about 8 feet. Tricolored blackbirds typically have

1 to 2 broods each breeding season. They form dense breeding colonies and defend only their nesting patch (Beedy et al. 2017).

Marginally suitable foraging habitat is present within the external areas of the BSA, in the dredge locks and access cuts and tidal marsh habitat. There are four CNDDB occurrences within 2 miles of the BSA.

Burrowing Owl

Burrowing owl (*Athene cunicularia*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species inhabits open, treeless areas with low, sparse vegetation, usually on gently sloping terrain. Burrowing owls nest in burrows dug by other animals, often in areas that have loose soil, a bit of elevation to avoid flooding, and nearby lookouts such as dirt mounds, bushes, fence posts, or road signs. Burrowing owls eat invertebrates and small vertebrates, including lizards, birds, and mammals, and hunt at all hours of the day and night. While hunting, they often stay close to the ground seizing prey in their talons. Between forays for food, they sleep on dirt mounds at their burrow entrances or on depressions in the ground.

There is potential for this species to occur within the BSA as suitable foraging, roosting, and nesting habitat is present within the external areas of the BSA, particularly on the upland edge of the salt pond complexes. This species is known to nest in berms along the Delta; it has been documented to be seasonally present in the berms at Cargill's Napa Plant site in the North Bay (S. von Rosenberg 2020, pers. comm., August 31). There are 10 CNDDB occurrences within 2 miles of the BSA.

Western Snowy Plover

The WSP is federally listed as threatened and is considered a Species of Special Concern by CDFW (CDFW 2019). This species inhabits barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, berms and flats at salt-evaporation ponds, river bars, and along alkaline or saline lakes, reservoirs, and ponds. Western snowy plovers breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. WSP have high breeding-site fidelity, but the location of nests within those breeding sites changes from year to year. In addition, site fidelity is associated with wintering areas. WSP also use the shores and earthen berms of salt ponds, alkaline lakes, and salt flats in landlocked portions of their range. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond earthen berms, dry salt ponds, and river bars. Nests typically occur in flat, open areas with sandy or saline substrates where vegetation and driftwood are usually sparse or absent. Nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips) (USFWS 2007). Nesting season extends from early March through late September. WSP winter mainly in coastal areas from southern Washington to Mexico. In winter, WSP are found on many of the beaches used for nesting as well as on beaches where they do not nest, in anthropogenic salt ponds, and on estuarine sand and mud flats.

The BSA contains suitable nesting and foraging habitat and WSP are known to occur. Nesting habitat exists within salt ponds, on interior earthen berms, and to a lesser degree, in areas outside the salt ponds. There is also a large amount of protected nesting habitat in areas adjacent to the Project area, such as Eden Landing Ecological Reserve. WSP have been recorded foraging and nesting in the Project area within the last several years, specifically at pond P2-13, where in 2015 Cargill representatives reported two separate sightings of an adult and two chicks, and P2-PP1, where SFBBO biologists reported a group of two adults and two chicks (Pearl et al. 2015). In 2017, Cargill staff and WRA again observed WSP nesting at pond P1-PP1, as well as within ponds P2-2, P2-7 and P2-8 (WRA 2017). They have also been documented nesting at the Redwood City Plant by USFWS in 2014. In addition, designated critical habitat exists within the Project area (Figure 3.4-2) and there are eight CNDDB occurrences within 2 miles of the BSA.

Northern Harrier

Northern harrier (*Circus cyaneus*) is considered a Species of Special Concern by CDFW. They are known to forage in coastal salt and freshwater marshes and adjacent habitats, and are also known to nest in high marsh on the ground or in low-growing vegetation. Suitable foraging habitat is present in the BSA, including both internal and external areas; nesting may occur in external portions of the Project in high marsh and other external areas that are not tidally inundated. There are 5 CNDDB occurrences within 2 miles of the BSA.

Salt Marsh Common Yellowthroat

Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) is considered a Species of Special Concern by CDFW (CDFW 2019). The salt marsh common yellowthroat is a resident of the San Francisco Bay region, in fresh and salt water marshes. This species requires thick, continuous cover down to the water surface for foraging and tall grasses, tule patches, and willows for nesting. This species is known to occur within the external areas of the Project within the dredge locks and access cuts and tidal marsh habitat, where maintenance or access work infrequently occurs and would not impact this species. There are 8 CNDDB occurrences within 2 miles of the BSA.

California Black Rail

California black rail is state listed as threatened (CDFW 2020) and is a California Fully Protected species (CDFW 2019). This species inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes. California black rail are primarily associated with emergent tidal marshes. The species is most abundant within pickleweed at or above the mean tide level. They prefer areas with dense cover of native marsh species and moist substrate, and nest in high marsh vegetation (Evens and Thorne 2015). Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. There are 11 CNDDB occurrences within 2 miles of the BSA.

Alameda Song Sparrow

The Alameda song sparrow (*Melospiza melodia pusillula*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species is a resident of salt marshes bordering the south San Francisco Bay. Alameda song sparrow inhabit pickleweed marshes and nest low (though high enough to escape high tides) in gumplant bushes and pickleweed. Suitable foraging, roosting, and nesting habitat is present within the BSA, and this species is known to occur in tidal marsh habitat within the BSA. There are 14 CNDDB occurrences within 2 miles of the BSA.

California Ridgway's Rail

The CRR, formerly called the California clapper rail, is the resident Ridgway's rail subspecies of northern and central California. Although formerly more widespread, it is currently restricted to the San Francisco Bay, with the largest populations occurring in remnant salt marshes of southern San Francisco Bay. No critical habitat has been proposed or designated for this subspecies.

The CRR occurs only within salt and brackish marshes. Important CRR habitat components are: (1) well-developed tidal sloughs and secondary sloughs; (2) beds of cordgrass in the lower marsh zone; (3) dense salt marsh vegetation for cover, nest sites, and brooding areas; (4) intertidal mudflats, gradually sloping banks of tidal channels, and cordgrass beds for foraging; (5) abundant invertebrate food resources; and (6) transitional vegetation at the marsh edge to serve as a refuge during high tides. In South and Central San Francisco Bay and along the perimeter of San Pablo Bay, CRR typically inhabits salt marshes dominated by pickleweed and cordgrass, with other halophytes (e.g., marsh gumplant, saltgrass, fleshy jaumea) typically present.

Breeding begins in mid-March and extends into July, with peak activity in late April to late May. California Ridgway's rail nests, constructed of wetland vegetation and platform-shaped, are placed near the ground in clumps of dense vegetation, usually in the lower marsh zone near small tidal channels. Existing marsh vegetation or drift material is used as a canopy over the nest platform. Although CRR is considered non-migratory, numerous accounts exist of juveniles dispersing widely between habitat areas (USFWS 1984).

Habitat for CRR is present in existing tidal marsh on the bayside margins of the outboard earthen berms at Newark Plants 1 and 2 and in marshes in close proximity to the Redwood City Plant. Individuals have been observed during surveys as recently as 2017 (and consistently in previous years) within salt marsh habitats adjacent to Newark Plants 1 and 2 and in the marshes across the sloughs bordering the Redwood City Plant (McBroom 2017). Marshes abutting the perimeter berms directly associated with the Redwood City Plant are not suitable nesting habitat for CRR due to their low elevation and limited width, but they may support CRR foraging. Portions of the BSA support nesting and foraging habitat for CRR where well-developed tidal marsh areas are present outboard of exterior earthen berms, and potentially on the outboard sides of such berms where vegetation is suitable. Nesting habitat for CRR within the BSA consists of large areas of pickleweed and cordgrass monocultures that are concentrated on the bayside marshes abutting exterior earthen berms, and along channels including Alameda Creek, Newark Slough, and Coyote Creek. Abundant foraging habitat exists on the margins of the marshes and along the creek and slough edges.

Although the South San Francisco Bay supports some of the largest populations of CRR, populations have declined in some areas due to invasive *Spartina* eradication efforts (USFWS 2012a). However, CRR have been observed in the BSA within recent years (McBroom 2017, Olofson 2018). The Invasive Spartina Project and other agencies perform annual surveys for CRR in various locations within and adjacent to the BSA. Between Plant 1 and Pond B-3C, Alameda Creek, Newark Slough, and Dumbarton/Audubon Marsh are surveyed. Directly south of Newark Plant 2, the Plummer Creek Mitigation Bank, Mowry Marsh North, Calaveras Point, and Coyote Creek/Mud Slough are surveyed. Adjacent to the Redwood City Plant, West Point Slough and Greco Island are surveyed. CRR were detected at all sites surveyed in 2018 (Olofson 2018), and it is likely that CRR nest and forage in other suitable habitat outside of the salt ponds within the BSA that are not regularly surveyed.

Black Skimmer

Black skimmer (*Rynchops niger*) is considered a Species of Special Concern by CDFW (CDFW 2019). This species forages in flight by opening their bill and dropping their long, narrow lower mandible into the water, skimming along until they feel a fish. Black skimmers inhabit coastal areas, usually around sandy beaches and islands. Nesting birds use open sandy areas, gravel or shell bars with sparse vegetation, or broad mats of wrack in saltmarsh. Foraging birds frequent places that concentrate prey: tidal waters of bays, estuaries, lagoons, creeks, rivers, ditches, and saltmarsh pools. Suitable foraging, roosting, and nesting habitat exists within and around the BSA; therefore, this species is likely to occur.

California Least Tern

The CLT is a federally endangered species that ranges in length from 8.25 to 9 inches. This species feeds primarily on small fish, but also shrimp and occasionally other invertebrates, by plunge-diving in bays, lagoons, estuaries, tidal marshes, river mouths, ponds and lakes, as well as in offshore deep-water habitats (USFWS 2017). Most CLT begin breeding in their third year, starting in April or May and ending in mid-June. Nesting occurs in colonies in relatively open areas, such as beaches or islands with no vegetation. This species rests on sandy beaches, mudflats, and salt pond dikes.

Currently, the breeding colony at Alameda Point, located approximately 20 miles north of Newark Plant 1, is the largest colony in San Francisco Bay and one of the most important breeding colonies in California. This colony had 358 breeding pairs in 2016 (Frost 2017), which has increased in size considerably from prior decades: 128 pairs were observed in 1993, and only 70 pairs in 1982 (Collins 1994). CLT also nest in Hayward Regional Shoreline where 83 breeding pairs were observed in 2016 (Frost 2017). Other breeding sites in the Bay Area include Napa Sonoma Marsh Wildlife Area, Montezuma Wetlands, Pittsburg Power Plant, and Eden Landing Ecological Reserve. Least terns have sporadically attempted to nest in Eden Landing on former salt pond bottoms, and were most recently successful in breeding in 2017, but since then have experienced poor breeding success due to predation (SFBBO 2020b).

Within the BSA, suitable roosting habitat exists in the form of internal and external berms, and dry salt ponds. Foraging habitat is present in external portions of the BSA. There are five CNDDB occurrences within 2 miles of the BSA.

Foraging Birds

Short-eared owl (*Asio flammeus*), white-tailed kite (*Elanus leucurus*), American peregrine falcon (*Falco peregrinus anatum*), loggerhead shrike (*Lanius ludovicianus*), and California brown pelican (*Pelecanus occidentalis californicus*) all have the potential to occur within the BSA because suitable foraging habitat exists both in the internal and external areas of the Project. However, no suitable nesting habitat occurs for any of these species within the BSA.

Mammals

Salt Marsh Harvest Mouse

The SMHM is federally and state listed as endangered and is a California Fully Protected species (CDFW 2019). This species is highly adapted to its marsh habitat (Fisler 1965), but reliance on the marshes of the San Francisco Bay has made this species vulnerable because more than 90 percent of tidal marshes have been lost since the mid-1800s (Williams and Faber 2001). Amplifying the effect of this spatial constraint is the increasing fragmentation of remaining SMHM habitat (Fisler 1961).

The SMHM is a relatively small rodent found only in and adjacent to suitable salt- and brackish-marsh habitat in the greater San Francisco Bay, San Pablo Bay, and Suisun Bay areas. Habitat associated with SMHM has been described as pickleweed-dominated marsh (Fisler 1965), although more recent studies have shown that SMHM is supported equally in pickleweed dominated and mixed-vegetation marsh (including native and non-native salt- and brackish-marsh species) (Sustaita et al. 2005, Sustaita et al. 2011). Shellhammer et al. (2010) found that SMHM inhabit brackish marshes with a developed thatch layer of vegetation, including bulrush (*Schoenoplectus* spp.), pepperweed/bulrush, and pepperweed/spearscale marshes. In saline marshes, like those of the south San Francisco Bay, habitat for SMHM tends to be marshes dominated largely by low pickleweed plains with patchy cordgrass.

The SMHM does not burrow; therefore, it depends on year-round vegetative cover. As such, the plant species composition is less important than the quality of cover from predators and the food sources provided by the vegetation. The SMHM prefers deep, dense vegetative cover greater than 11.8 inches high (USFWS 1984), although there are indicators that shorter stands of vegetation (5.9 inches) may also support this species (Fisler 1965, Shellhammer et al. 1982). In tidal areas, the suitability of cover and vegetation depth also depends on the degree to which tidal vegetation is submerged during high tide events.

Another key habitat requirement for this species is upland or tidal refuge habitat, which is used to escape high tides and storm events that flood portions of its habitat. SMHM is a good swimmer when necessary, but it feeds, nests, and seeks cover outside the water and thus requires refuge from incoming tides and floods. Tall stands of pickleweed that remain unsubmerged during high tides or floods, as well as gumplant, bulrush, natural and artificial dikes and berms, floating debris, and grasslands adjacent to the marsh edge, are all potential sources of refuge. Without at least one of these forms of refuge available, the SMHM cannot persist in a wetland.

Habitat for SMHM must also provide suitable food sources, such as seeds, grass, and pickleweed. The SMHM tolerates food and water with high salinities, which may give this species a competitive advantage over other small mammal species, though high salinity is not a strict habitat requirement. The presence of grassland habitat adjacent to the marsh is not a strict requirement either, though the SMHM’s seasonal use of available upland grasslands (sometimes over 300 feet from the marsh edge) suggests that they opportunistically forage and seek cover within grasslands (USFWS 2010).

Though surveys have not been completed in the Project area, harvest mice of unknown species have been observed within Newark Plants 1 and 2 during monitoring activities by WRA as recently as late 2018. There are 26 CNDDB occurrences of SMHM within 2 miles of the BSA. Within the past several years, genetic testing has also confirmed SMHM populations at Eden Landing approximately 1 mile north of the Newark Plant 1 (Statham et al. 2016), and trapping efforts have confirmed presence of the species in the Dumbarton marshes (CDFW 2020b). There is habitat for SMHM within tidal marsh and adjoining berms in and along the margins of Newark Plants 1 and 2, and at the Redwood City Plant, though potential presence at the Redwood City Plant is limited due to the narrow width and low elevation of the marshes abutting the berms along First Slough and Westpoint Slough. Habitat is largely concentrated on the outboard margins of the salt ponds, though well-vegetated berms surrounding the salt ponds may provide refugia for SMHM where they are close to core marsh habitat.

Salt Marsh Wandering Shrew

The salt marsh wandering shrew is considered a Species of Special Concern by CDFW (CDFW 2019). Similar to SMHM, salt marsh wandering shrew inhabit salt marshes of South San Francisco Bay that consist of dense pickleweed and require upland or tidal refuge habitat, and are known to occur in tidal marsh habitat within the BSA. There are 5 CNDDB occurrences of this species within 2 miles of the BSA, and there is suitable habitat for salt marsh wandering shrew within tidal marsh and adjoining berms in and along the margins of Newark Plants 1 and 2 and at the Redwood City Plant. Habitat is largely concentrated on the outboard margins of the salt ponds, though berms surrounding the salt ponds provide refugia.

Marine Mammals

In general, the presence of marine mammals in San Francisco Bay is related to distribution and presence of prey species and foraging habitat. Pacific harbor seals (*Phocaituline richardsi*), California sea lions (*Zalophus californianus*), and harbor porpoises (*Phocoena phocoena*) are found year-round within San Francisco Bay and are the marine mammal species most likely to occur in the BSA. Other marine mammal species that have occasionally been seen in San Francisco Bay include the gray whale (*Eschrichtius robustus*), the humpback whale (*Megaptera novaeangliae*), the bottlenose dolphin (*Tursiops truncates*), and the northern elephant seal (*Mirounga angustirostris*). Less frequently, the Guadalupe fur seal (*Arctocephalus townsendi*) and the northern fur seal (*Callorhinus ursinus*) have also been observed (Caltrans 2015).

Pacific harbor seals and California sea lions both use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding (NMFS 2007). California sea lions are noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest; however, there are no known haul-out locations in proximity to the BSA. Due to the lack of known haul-out locations in the BSA, the presence of these species in the BSA is likely to be confined to a few individuals temporarily present.

Harbor seals have established haul-out sites and use of these haul-out sites varies over time. South Bay sites including Mowry Slough, Bair Island, Corkscrew Slough, Guadalupe Slough, Coyote Creek, and Greco Island are currently used or have been important haul-outs historically (H.T. Harvey et al. 2005). These haul-out sites range from within the BSA at Mowry Slough and Coyote Creek to 0.25 mile from the BSA at Bair Island, 1 mile from the BSA at Corkscrew Slough, 2 miles from the BSA at Guadalupe Slough, and 0.5 mile from the BSA at Greco Island. Bair Island, Corkscrew Slough, Mowry Slough, Newark Slough, and Greco Island have also been identified as pupping sites (Green 2004 as cited in HT Harvey et al. 2005). Therefore, harbor seals have a moderate to high potential to traverse and/or forage in aquatic habitats adjacent to outboard berms within the BSA.

3.4.3 Regulatory Setting

3.4.3.1 Federal and State

Federal and state laws and regulations pertaining to this issue area and relevant to the Project include the FESA of 1973 (16 United States Code [USC] 1531–1544), as amended, which protects plants, fish, and wildlife that are listed as endangered or threatened by the USFWS or NMFS; the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC §§ 703–711), which protects all migratory birds, including active nests and eggs; the federal Clean Water Act (33 USC § 1251 et seq.), which restores and maintains the chemical, physical, and biological integrity of the nation's waters; the federal Marine Mammal Protection Act (MMPA) of 1972 (16 USC 1361–1407), which prohibits the taking and importation of marine mammals as well as products from them; the Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.), under which waters of the State are assigned beneficial uses including those that support biological resources; and the CESA (§§ 2050–2098 of the California Fish and Game Code [CFGC]), which provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the CDFW, and prohibits the taking of such species without its authorization. BCDC regulations and policies including the McAteer-Petris Act and the Bay Plan are discussed in Section 3.4.3.2.

The Refuge operates under a Comprehensive Conservation Plan, which established goals, objectives, and strategies for improving Refuge conditions (USFWS 2012a). The CCP recognizes, however, that "Cargill Salt retains perpetual salt making rights on the Mowry and Newark Ponds" and therefore does not contemplate any changes in use "that would interfere with Cargill's rights per the Declaration of Taking dated June 30, 1977." Following the protocols attached to the reserved operating rights, Cargill and the USFWS have a long history of communicating and partnering on projects to voluntarily minimize the impacts of authorized operations on long-term plans for the Refuge.

On October 5, 2020, the U.S. District Court for the Northern District of California vacated USEPA's 2019 determination that approximately 1,300 acres of the Redwood City Plant are non-jurisdictional "fast lands,[6]" and remanded the matter back to USEPA to reconsider the jurisdictional status of the Redwood City Plant (except for the approximately 95 acres of levees and pads, which the Court agreed were fast lands). USEPA has not made any determination on

[6] "Fast lands" are lands that are high and dry near water (also called uplands).

remand subsequent to the court's decision. Therefore, the CWA jurisdictional status of most of the Redwood City Plant is unresolved at this time.

No federal, state, or regional Habitat Conservation Plans or Natural Community Conservation Plans have been adopted for the Project area.

Local San Francisco Estuary Invasive Spartina Project

The Invasive Spartina Project implements a coordinated, region-wide eradication program to arrest and reverse the spread of invasive non-native cordgrass species. The Invasive Spartina Project is focused on the nearly 40,000 acres of tidal marsh and 29,000 acres of tidal flats that constitute the shoreline areas of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma, and Sacramento counties.

Fremont

The City of Fremont's General Plan recognizes that Cargill retains the right to harvest salt on approximately 9,000 acres of the land sold to the USFWS and CDFW as documented in legal agreements governing the properties. Much of this land is located in the Fremont Baylands between the Dumbarton Bridge and Mowry Slough and is part of the Don Edwards San Francisco Bay National Wildlife Refuge, which is the first urban wildlife refuge in the United States, and extends around the southern perimeter of the Bay. The General Plan also notes that salt harvesting operations in this area are regulated to ensure that they are consistent with habitat protection and restoration goals. The refuge contributes to the open space quality of the area and provides a unique natural resource for the region.

Newark

The City of Newark's General Plan also recognizes that Cargill has the perpetual right to use salt "evaporator" ponds within the Refuge for its solar salt production system. Cargill's activities are consistent with the City's General Plan.

Redwood City

Redwood City's General Plan continues the prior 1990 General Plan's allowable land uses for the Cargill Site, and allows the continued salt harvesting across the salt crystallization pond area. For any future uses proposed for the salt crystallization ponds, Redwood City would coordinate with BCDC to promote further consistency with the Bay Plan.

3.4.3.2 Bay Conservation and Development Commission

The McAteer-Petris Act and the Bay Plan (BCDC 2020) contain Sections and Policies that are relevant to biological resources for the Project, which include (but are not necessarily limited to) the following:

McAteer-Petris Act Section 66602.1. Salt Ponds

The Legislature further finds and declares:

(a) That areas diked off from the bay and used as salt ponds and managed wetlands are important to the Bay Area in that, among other things, such areas provide a wildlife habitat and a large water surface which, together with the surface of the bay, moderate the climate of the Bay Area and alleviate air pollution;

(b) That it is in the public interest to encourage continued maintenance and operation of the salt ponds and managed wetlands;

(c) That, if development is proposed for these areas, dedication or public purchase of some of these lands should be encouraged in order to preserve water areas; and

(d) That, if any such areas are authorized to be developed and used for other purposes, the development should provide the maximum public access to the bay consistent with the proposed project and should retain the maximum amount of water surface area consistent with the proposed project.

McAteer-Petris Act Section 66605. Fill

The Legislature further finds and declares, with regard to fill in the San Francisco Bay (including contiguous wetlands) and in certain waterways:

(d) That the nature, location, and extent of any fill should be such that it will minimize harmful effects to the bay area, such as, the reduction or impairment of the volume surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment, as defined in PRC § 21060.5.

Bay Plan Part III. The Bay as a Resource: Policies

***Fish, Other Aquatic Organisms and Wildlife*:**

Policy 1. To assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased.

Policy 2. Native species, including candidate, threatened, and endangered species; species that the California Department of Fish and Wildlife, the National Marine Fisheries Service, and/or the U.S. Fish and Wildlife Service have listed under the California or Federal Endangered Species Act; and any species that provides substantial public benefits, as well as specific habitats that are needed to conserve, increase, or prevent the extinction of these species, should be protected, whether in the Bay or behind dikes. Protection of fish, other aquatic organisms, and wildlife and their habitats may entail placement of fill to enhance the Bay's ecological function in the near-term and to ensure that they persist into the future with sea level rise.

Policy 4. The Commission should:

(a) Consult with the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species;

(b) Not authorize projects that would result in the "taking" of any plant, fish, other aquatic organism or wildlife species listed as endangered or threatened pursuant to the state or federal Endangered Species Acts, or the federal Marine Mammal Protection Act, or species that are candidates for listing under these acts, unless the project applicant has obtained the appropriate "take" authorization from the U.S. Fish and Wildlife Service, National Marine Fisheries Service or the California Department of Fish and Wildlife; and (c) Give appropriate consideration to the recommendations of the California Department of Fish and Wildlife, the

National Marine Fisheries Service or the U.S. Fish and Wildlife Service in order to avoid possible adverse effects of a proposed project on fish, other aquatic organisms and wildlife habitat.

***Tidal Marshes and Tidal Flats*:**

Policy 1. Tidal marshes and tidal flats should be conserved to the fullest possible extent. Filling, diking, and dredging projects that would substantially harm tidal marshes or tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative.

Policy 2. Any proposed fill, diking, or dredging project should be thoroughly evaluated to determine the effect of the project on tidal marshes and tidal flats, and designed to minimize, and if feasible, avoid any harmful effects.

Policy 3. Projects should be sited and designed to avoid, or if avoidance is infeasible, minimize adverse impacts on any transition zone present between tidal and upland habitats. Where a transition zone does not exist and it is feasible and ecologically appropriate, shoreline projects should be designed to provide a transition zone between tidal and upland habitats.

***Subtidal Areas*:**

Policy 1. Any proposed filling or dredging project in a subtidal area should be thoroughly evaluated to determine the local and Bay-wide effects of the project on: (a) the possible introduction or spread of invasive species; (b) tidal hydrology and sediment movement; (c) fish, other aquatic organisms and wildlife; (d) aquatic plants; and (e) the Bay's bathymetry. Projects in subtidal areas should be designed to minimize and, if feasible, avoid any harmful effects.

<u>Bay Plan Part IV. Development of the Bay and Shoreline: Policies</u>
Mitigation:

Policy 1. Projects should be designed to avoid adverse environmental impacts to Bay natural resources such as to water surface area, volume, or circulation and to plants, fish, other aquatic organisms and wildlife habitat, subtidal areas, or tidal marshes or tidal flats. Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable. Finally, measures to compensate for unavoidable adverse impacts to the natural resources of the Bay should be required. Mitigation is not a substitute for meeting the other requirements of the McAteer-Petris Act.

<u>Bay Plan Part V. The Plan Maps (Plan Map 7 – South Bay Map): Policies</u>
Policy 2. Coyote Hills Regional Park: Preserve multi-use public access along Alameda Creek Trail to Don Edwards San Francisco Bay National Wildlife Refuge and to Highway 84 toll plaza crossing. Preserve visitor’s center, picnic areas, camping, multi-use trails, and naturalist programs. Protect tidal wetlands and provide opportunities for wildlife observation and non-motorized small boat access.

Policy 4. Newark Slough to Coyote Creek: Protect harbor seal haul-out and pupping sites where harbor seals rest, give birth and nurse their young. Projects allowed only if protective of harbor seals and other sensitive wildlife.

3.4.4 Impact Analysis

Potential impacts to biological resources would be considered significant if implementation of the proposed Project would do any of the following:

- Create a substantial adverse effect on:
  - Candidate, sensitive, or special-status species
  - Riparian habitat or other sensitive natural community
  - State or federally protected wetlands
- Interfere with the movement of wildlife or wildlife corridors, or with the use of native wildlife nursery sites

These significance criteria were used to conduct the impact analysis.

3.4.4.1 Impact BIO-1: Substantial Adverse Effect on Candidate, Sensitive, or Special-status Species

***Less than Significant*.** The proposed Project may have an adverse effect on the special-status species identified in Tables 3.4-1 and 3.4-2. These species could be affected by general disturbances that could interrupt important life history functions including foraging, breeding, and dispersal. Disturbance could also cause sub-lethal increases in stress, which could affect health and fitness.

Many of the special-status bird species with potential to occur in the Project area including short-eared owl, northern harrier, white-tailed kite, American peregrine falcon, loggerhead shrike, and California brown pelican are limited to foraging in the BSA and are not expected to nest in the BSA. Given the limited size of the work areas relative to adjacent areas and the temporary and localized nature of maintenance activities, the temporary disturbance of foraging habitat and individuals of these species resulting from operations and maintenance activities are not expected to adversely affect these or other migratory bird species. These species are not discussed further in this EA.

The use of equipment and vehicles near salt marsh and other aquatic habitats is required for the Project activities identified in Section 2.10, including earthen berm maintenance, lock access/egress events, stockpiling material, sediment removal, and other infrastructure maintenance, and has the potential to adversely affect special-status species that occur in salt marshes. This includes tricolored blackbird, salt marsh common yellowthroat, California black rail, Alameda song sparrow, CRR, CLT, SMHM, salt marsh wandering shrew, brittlescale, and San Joaquin spearscale. Burrowing owl, WSP, northern harrier, black skimmer, and Congdon's tarplant also have potential to occur in the BSA, particularly along and within earthen berms, surrounding grasslands, and dry ponds, and Project activities have the potential to adversely affect these species.

The use of equipment or presence of workers near marsh habitat on berms, and in dry salt ponds could injure or crush these species, their broods, or their nests; disturb nesting, foraging, or hauled-out individuals via noise, vibratory, or visual disturbance; and potentially cause nest abandonment and habitat degradation. These potential effects are part of the environmental baseline as part of the existing operations that have occurred for many decades. The changes from the baseline operations will be limited to a slight increase in berm maintenance, berm heightening, lock access/egress events, repairs and/or replacements of infrastructure, and the vinyl sheet pile evaluation. New potential impacts would be avoided and/or minimized through the BMPs identified in Section 2.13 that Cargill has implemented for years in accordance with its existing permits; these BMPs would be implemented depending on the various Project activities, including the Endangered Species and Sensitive Natural Resources BMPs, which would be implemented across all proposed work that could adversely affect sensitive species and/or sensitive natural resources. For ease of reference, Project activities have been split into several subsections as discussed in the following subsections.

Effects of Earthen Berm Maintenance, Materials Stockpiles, Riprap Placement, Weed Management, and Other Infrastructure Maintenance on Special-Status Species

As part of operations and maintenance activities, there would be weed management activities as well as placement of various materials near marsh habitat including excavated materials, fill, materials for berm repair and/or berm heightening, riprap, and other construction materials, and this could adversely affect salt marsh-dependent species and species occurring internal to the salt pond system.

Impacts from berm maintenance may occur along 38.5 miles of berm annually over the proposed 10-year permit term, an increase of approximately 5.5 miles per year over baseline conditions. It is anticipated that 1,385 linear feet of berms would be raised per year for sea level rise adaptation at Newark Plant 1, 4,060 feet linear feet per year at Newark Plant 2, and 2,100 linear feet per year at the Redwood City Plant. This would be accomplished by importing approximately 9,600 CY of clean material per year. Two miles of berm cores would be compacted under the proposed Project over a 10-year period; this is a reduction of 1 to 2 miles per 10 years relative to the baseline conditions, and a reduction of approximately 950 CY of clean fill materials per year. Additionally, for the proposed SLR study, approximately 500 to 600 feet of vinyl sheets would be installed along the inboard side of the berms along Pond 2-12 at Newark Plant 2. All of these activities, except for berm heightening and the SLR study, are already part of the existing operations and consequently the increase above baseline conditions would not cause a significant change in the background conditions.

Maintenance activities would remain unchanged from the baseline, and would include but not be limited to the maintenance of miscellaneous structures and equipment, including items such as platforms and trestles, siphons, pipelines, brine channels, pumps, fences, gates, culverts, trach racks, and electrical lines.

Potential direct effects to salt marsh habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the BMPs in Section 2.13, including those listed below. For a detailed description of each BMP please refer to Section 2.13. These measures will continue to ensure that impacts to species are less than significant.

With implementation of the BMPs, biologists would provide training regarding special-status species that may occur within the Project area (**ES and SNR-12: Environmental Training**) and information about the latest observations of special-status species (**ES and SNR-10: Endangered**

Species Observed) and bird nesting activities (**ES and SNR-13: Notice about Nesting Activities**), including observations of WSP and their broods. This will inform staff on appropriate practices to reduce effects to these species and avoid and/or minimize the potential for effects to nesting birds and WSP broods during maintenance activities.

Vehicle speed limits (**ES and SNR-1: Speed Limit**) and limiting vehicular travel to berm roads that have been graded or have been maintained for all-weather traffic would occur (**Berm Maintenance-10: Vehicular Traffic**). This would allow for vehicle operators to visually spot wildlife species and avoid them while driving, and also allow for mobile species to safely avoid vehicles. Confining vehicles to established areas would avoid sensitive habitat where special-status species are more likely to occur, and further avoid and/or minimize any potential impacts from vehicle strikes.

Additional BMPs would implement a seasonal work window (**ES and SNR-3: Seasonal Work**) and nesting avoidance buffers for CRR (**Berm Maintenance-7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance**) to avoid and/or minimize potential disturbances which could cause changes in behavior, increased stress, and/or nest abandonment. A similar buffer around nesting WSP would also be implemented (**ES and SNR-8: Nesting Western Snowy Plover Buffer**) to avoid and/or minimize potential disturbances that could adversely affect the species. Notices would be posted identifying approximate nest locations as well as any road closures and/or buffers around the nests to notify staff about nest status to allow for nests to be avoided and not disturbed by maintenance activities (**ES and SNR-13: Notice about Nesting Activities**).

Maintenance activities have the potential to impact adjacent salt marsh and other sensitive habitats. Implementation of the BMPs would avoid and/or minimize potential impacts to these areas and the species that reside within them by minimizing dust, light, and noise levels when working near or on outboard berms near vegetated marsh (**Berm Maintenance-8: Dust, Light, and Noise**). Additional BMPs would reduce the likelihood of material falling into (**Berm Maintenance-1: Choker Berm, Berm Maintenance-2: Berm Slope, and Berm Maintenance-5: Excess Material**) or spills entering into (**Berm Maintenance-3: Spills**) salt marsh habitat during ongoing operations and maintenance activities and therefore would reduce the chances of injury and mortality to salt marsh species. Similarly, work would be avoided and/or minimized during high tides (**Berm Maintenance-6: High Tides**) when species are dispersing from adjacent high marsh to seek refuge in higher ground.

BMPs would also ensure that clean materials are used during maintenance activities (**Berm Maintenance-9: Material**), that the minimum amount of riprap is used to stabilize areas (**Riprap Placement-1: Riprap Amount**), and that these materials would be placed in areas that are generally free of marsh vegetation (**Riprap Placement-3: Riprap Placement**). This would avoid and/or minimize potential habitat conversion and loss of salt marsh habitat, including high-tide refugia, as well as direct effects from fill materials on salt marsh habitats used by special-status species. If concrete is used in proximity to salt marsh habitat or in water, the concrete would be contained within forms, and allowed to cure at least 30 days prior to coming into contact with water (**ES and SNR-20: Concrete**). This would prevent leaching of pollutants into the water from concrete, as well as potential increases in alkalinity which could affect special-status species and fish.

During Project activities, there is potential for weeds, nuisance species, and other invasive plant species to enter the Project area and become established which could directly and indirectly effect special-status species. A weed management plan would be implemented (**Weed Management-1: Weed Management Plan**). This plan and other weed management BMPs include measures to prevent the introduction and spread of weeds, nuisance species, and invasive plant species, and measures to identify and remove invasive weed populations (**Weed Management--2: Weed Identification Cards, Weed Management-3: Weed Infestation, Weed Management-4: Clean Equipment, and Weed Management-5: Invasive Cordgrass**). This would avoid and/or minimize the potential for weeds, nuisance species, and invasive plant species to become established and outcompete native species, and potentially displace special-status species that rely on native vegetation or natural habitats to persist.

Evaluation of the use of vinyl sheet piles would include the installation of approximately 600 linear feet of vinyl sheet piles along the inboard berm of Pond P2-12. Pond P2-12 is one of the ponds that currently holds MSS (bittern). As the MSS within this pond would result in unsuitable habitat for wildlife, there is not expected to be movement between outboard areas and the pond, so movement patterns of special-status species would not be impacted and there are not expected to be any long-term impacts to special-status species. All impacts are anticipated to be short-term and associated with the installation of the piles. Potential impacts to nesting birds along the berms would be minimized through implementation of BMPs described previously including seasonal work windows (**ES and SNR-3: Seasonal Work**) and nesting avoidance buffers for CRR (**Berm Maintenance-7: California Ridgway's Rail Avoidance During Emergency Berm Maintenance**) and WSP (**ES and SNR-8: Nesting Western Snowy Plover Buffer**). Notices would be posted identifying approximate nest locations as well as any road closures and/or buffers around the nests to notify staff about nest status to allow for nests to be avoided and not disturbed during installation or maintenance of the vinyl sheet piles (**ES and SNR-13: Notice about Nesting Activities**). In addition, the limited area where the piles will be installed relative to the 123 miles of berms (649,440 feet) is 0.09 percent of the total berm length, so only a very small portion of berm areas would be disturbed.

Effects of Lock Access/Egress on Special-status Species

Lock access would also be required as part of operations and maintenance activities. This activity could also adversely affect salt marsh habitat and special-status species and include temporary loss of salt marsh habitats via excavation and sidecasting/stockpiling of materials. The baseline lock access/egress is one time per year with an estimated impact of 1.2 acres of salt marsh habitat and upland refugia disturbed per year. The proposed Project increases this access to approximately four times per year, with up to an estimated 1.2 acres of salt marsh habitat and upland refugia disturbed at each of up to four lock access point annually over the proposed 10-year permit term. Although there would be an increase in disturbed areas over baseline conditions, potential direct impacts to salt marsh habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the

BMPs presented in Section 2.13, including those listed below. For a detailed description of each BMP please refer to Section 2.13.

Similar to the discussion in the Effects of Earthen Berm Maintenance, Materials Stockpiles, Riprap Placement, Weed Management, and Other Infrastructure Maintenance on Special-status Species sections, with implementation of the BMPs staff would receive appropriate training and information about special-status species, special-status species observations, bird nesting activities, and speed limit restrictions (**ES and SNR-12: Environmental Training, ES and SNR-10: Endangered Species Observed, ES and SNR-13: Notice about Nesting Activities, and ES and SNR-1: Speed Limit**). This would avoid and/or minimize the potential for effects to special-status species and nesting birds during maintenance activities, and minimize the potential for weeds, nuisance species, and other invasive plant species to enter the Project area and become established.

With implementation of additional BMPs, impacts to CRR, WSP, and SMHM would be avoided and/or minimized. A seasonal work window for CRR (**ES and SNR-3: Seasonal Work**) and protocol-level surveys for CRR (**Lock Access/Egress-2: CRR Surveys**) would allow for avoidance of nesting CRR and the identification and protection of any existing nests with a buffer during lock access/egress activities. High marsh features will be avoided to the maximum extent feasible, providing refugia for CRR during high tide events (**Lock Access/Egress–6: High Marsh Preservation**).

A similar buffer around nesting WSP (**ES and SNR-8: Nesting Western Snowy Plover Buffer**) would be implemented to avoid and/or minimize potential disturbances which could adversely affect the species. If marsh vegetation would be impacted, it would be removed using hand tools to allow for SMHM to leave the area and avoid and/or minimize the potential for them to be impacted by Project activities (**Lock Access/Egress-3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion and Lock Access/Egress-4: SMHM 100-Foot Buffer**). This would reduce the risk of injury and mortality overall by encouraging SMHM and CRR to move away from work areas.

With implementation of the additional lock access/egress BMPs, impacts to adjacent salt marsh and other sensitive habitats would be avoided and/or minimized. Prior to lock access/egress, areas that have high environmental sensitivity would be identified and a work plan would be developed which would include avoiding placement of sidecast material in these areas to the extent feasible (**Lock Access/Egress-1: Environmentally Sensitive Areas Identified in Work Plan**). If placement is necessary in salt marsh habitat, the vegetation in these areas would be removed using hand tools (**Lock Access/Egress–3: Marsh Vegetation Removal for Salt Marsh Harvest Mouse Exclusion**), and the stockpile areas will be staked out to avoid and/or minimize the potential for impacting adjacent areas (**Lock Access/Egress-7: Excavated Material**). In addition, high marsh features would be avoided where possible to allow for salt marsh species to have refuge sites during high tide events (**Lock Access/Egress-6: High Marsh Preservation**). These BMPs would serve to avoid and/or minimize potential effects to salt marsh habitat, and would similarly avoid and/or minimize potential effects to the special-status species that rely on these habitats.

Following construction in an outboard marsh, vegetation would be allowed to recruit naturally, and the impacted area would be monitored for non-native plant species invasion. If target non-natives become established, they would be removed according to the Weed Management Plan (**Lock Access/Egress-11: Vegetation Recruitment and Monitoring**). Steps would be taken specifically to prevent the establishment of perennial pepperweed (**Lock Access/Egress-12: Pepperweed Prevention**). This plant species is known to invade salt marsh and outcompete native species; preventing establishment of this and other invasive plant species would prevent native plant species from being outcompeted and avoid the potential for displacement of special-status species that rely on native vegetation.

An analysis of aerial imagery between 2010 and 2015 showed that lock access cuts revegetate substantially within several years of lock access. These findings corroborate the analysis of ground surveys of seven locks accessed between 1995 and 1999, which indicated that vegetation on the lock berms, stockpiles and cut areas substantially recovered approximately three years after access (WRA 2016). This demonstrates the effectiveness of the BMPs in restoring disturbed areas.

Sediment Removal from Intake Structures, Water Intake, and Pile Driving

Sediment removal from intake structures, water intake, and pile driving would also be required as part of operations and maintenance activities. Baseline conditions for the Project included no sediment removal, but the proposed Project includes removal of approximately 1,000 CY of sediment per year from the Project area. Sediment removal from intakes would not deepen the natural slough or channel bottom; it would be limited to the sediment that silts in around the intake structures. This sediment removal is anticipated to be conducted by either mechanical or hydraulic suction equipment. The activities mentioned above could adversely affect aquatic habitat and fish and marine mammals including green sturgeon, steelhead, longfin smelt, Pacific harbor seal, and California sea lion, which all have potential to occur within the BSA in open water. Work activities such as pile driving, which may be required for piers and platforms, and pumping, which may be required for moving brine and pumping donuts and internal coffer dams, have the potential to adversely affect these aquatic species. The previously mentioned fish species have the potential to be disturbed or injured by pile driving, and entrainment during pumping or hydraulic suction has the potential to injure or kill fish. Marine mammals have the potential to be disturbed by these activities. Potential direct impacts to open water habitat and special-status species associated with these activities would be avoided and/or minimized through the use of the BMPs in Section 2.13.

Pumping of water would occur during the fish work window (June – November) to the maximum extent feasible (**EN and SSR-18: Pumping**); this window corresponds with when steelhead are not expected to be present in the BSA, and when longfin smelt would be expected to occur at their lowest levels. This would also avoid migratory spawning movements for both steelhead and longfin smelt, downstream migration of steelhead smolts, and larval and post-larval longfin smelt, which are the most likely life stage to be entrained during pumping activities. Presence of these species would also be avoided and/or minimized by pumping during conditions of higher salinity and temperatures, as out-migrating steelhead smolts would be expected to avoid these areas, and longfin smelt cannot successfully spawn in higher-salinity areas and preferentially avoid high temperature waters.

When hydraulic suction is used for sediment removal around water intakes, divers would use 4-inch to 6-inch hoses and low velocity pumps to carefully remove sediment. This would minimize any potential turbidity increases associated with the operation, and because a diver is directing the head of the hose this method provides precision in movement and enables the divers to avoid any visible fish/biota. The diver would submerge the end of the hose into the sediment before engaging the pump and would keep it submerged whenever the suction pump is in operation (disengaging the pump when the hose has to be repositioned), which would further reduce the exposure of fish to entrainment. Use of this methodology would avoid impacts to special-status fish species if present.

In addition, a buffer would be implemented around active seal pupping locations (**ES and SNR-9: Seal Pupping Buffer**), only designated sizes and pile types would be used for pile driving (**ES and SNR-15: Pile Driving**), and a biological monitor would be present during impact pile driving activities. If a seal or sea lion is observed within 1,000 feet of pile driving activities then pile driving would cease until the individual(s) has left the buffer area (**ES and SNR-16: Biological Monitoring of Pile Driving**).

Summary

Routine operations and maintenance have occurred within the Project area for many decades. In terms of assessing the significance of potential impacts to special-status species resulting from Project activities, existing potential impacts resulting from activities permitted under the existing permit constitute baseline conditions. There is no evidence or documentation that indicates that routine operations and maintenance which have actually occurred to date have caused a substantial impact to special-status species or have contributed substantially to the decline of any individual special-status species or its habitat. Further, operations and maintenance activities maintain berms and salt ponds, which ensure the availability of high tide refuge, roosting, nesting, and foraging habitat for the identified special-status species. With implementation of the BMPs discussed above, the potential for Project activities above baseline conditions to adversely affect special-status species and salt marsh during Project activities would be avoided and/or minimized to a less-than-significant level. No permanent loss of habitat resulting from Project activities is anticipated, but there would be some temporary degradation of salt marsh habitat which could affect special-status species that reside in these immediate areas. The temporary degradation of special-status species habitat is not considered a potentially significant impact to special-status species.

With respect particularly to USACE permitting requirements for the proposed Project, mitigation for ongoing solar salt production has already been provided under the Mitigation in Perpetuity agreement with USACE (File Number 19009S98). Per this document, the 49-acre restoration project is intended to satisfy the compensatory mitigation requirement for activities associated with the ongoing solar salt production in the south San Francisco Bay over the life of this permit, and, if the nature of the work remains the same, beyond to subsequent permits as well (Appendix A). As described in Section 2.6.2, the mitigation completed by Cargill covered maintenance impacts associated with maintenance activities over approximately 30,000 acres.

Cargill currently operates on a footprint of 12,100 acres and the slight increase in activities above the current baseline would be still be less activity than that addressed by the Mitigation in Perpetuity agreement. With incorporation of the BMPs identified previously and with mitigation previously provided under the Mitigation in Perpetuity agreement, potential adverse effects to special-status species are considered to be less than significant.

3.4.4.2 Impact BIO-2: Substantial Adverse Effect on Riparian Habitat or Other Sensitive Natural Community

***Less than Significant*.** The Northern Coastal Salt Marsh is a sensitive natural community within the BSA (Figure 3.4-2). Northern Coastal Salt Marsh is found on the outboard side of most outboard berms, wherever tidal action and elevation are adequate to support this community type.

Permanent loss of Northern Coastal Salt Marsh habitat is not expected to result from the Project. It is estimated that up to approximately 1.2 acres of salt marsh habitat could be temporarily disturbed up to four times annually at lock access points over the 10-year permit period as a result of activities associated with lock access and egress, an increase of up to three lock access events per year compared to the baseline. The number of lock access events would decrease over time as more berms are made drivable.

Additionally, temporary degradation or loss of Northern Coastal Salt Marsh habitat could inadvertently occur as a result of some of the maintenance activities. The use of equipment on berms and near marsh habitat could cause damage to salt marsh if it is inadvertently crushed. Spills of fluids such as oils and fuels from equipment could harm vegetation, soil, and water in marsh habitats. During berm maintenance, marsh vegetation could be temporarily removed or buried. Habitat could also be damaged by foot traffic of crew members. During placement of silt or excavated material removed from intake structures, gates, pipes, etc., material could flow or fall into marsh habitat, damaging, crushing or burying marsh vegetation. These are temporary impacts, and marsh habitat becomes re-established relatively quickly following these potential impacts.

With implementation of the BMPs, impacts to Northern Coastal Salt Marsh would be avoided and/or minimized. Similar to as described in Impact BIO-1, these BMPs would reduce the likelihood of material falling or spills entering into salt marsh habitat during ongoing operations and maintenance activities and therefore prevent marsh features and vegetation from being buried or altered (**Berm Maintenance-1: Choker Berm, Berm Maintenance-2: Berm Slope**, and **Berm Maintenance-3: Spills**). Land-based equipment would also be used on the top of berms when possible to avoid and/or minimize the use of locks and avoid digging an access channel through salt marsh vegetation, thereby preserving salt marsh vegetation and topography (**Berm Maintenance-4: Berm Work**). These BMPs would also ensure that the minimum amount of riprap is used to stabilize areas, and that riprap would be placed in areas that are generally free of marsh vegetation (**Riprap Placement-1: Riprap Amount and Riprap Placement-2: Riprap Placement**). A weed management plan would be implemented, and this plan and other weed management BMPs include measures to prevent the introduction and spread of weeds, nuisance species, and invasive plant species; and measures to identify and remove invasive weed populations (**Weed Management-1: Weed Management Plan**, **Weed Management-2: Weed Identification Cards, Weed Management-3: Weed Infestation, Weed Management-4: Clean Equipment, and Weed Management-5: Invasive Cordgrass**). This would avoid and/or minimize the potential for weeds, nuisance species, and invasive plant species to become established, outcompete native species, and result in degradation of Northern Coastal Salt Marsh. With implementation of these BMPs, the potential for habitat conversion and loss of Northern Coastal Salt Marsh habitat would be avoided and/or minimized.

Prior to lock access/egress, areas that have high environmental sensitivity, including Northern Coastal Salt Marsh, would be identified and a work plan would be developed which would include avoiding placement of sidecast material in these areas to the extent feasible (**Lock Access/Egress-1: Environmentally Sensitive Areas Identified in Work Plan**). In addition, high marsh features would be avoided where possible to allow for salt marsh vegetation and topography to be preserved (**Lock Ingress/Egress-6: High Marsh Preservation**). Following lock egress, vegetation would be allowed to recruit naturally, and steps will be taken to prevent the establishment of non-native plant species including perennial pepperweed (**Lock Access/Egress-11: Vegetation Recruitment and Monitoring Lock Access/Egress-12: Pepperweed Prevention**). By preventing establishment of this and other invasive plant species, native marsh vegetation would be allowed to recruit naturally and not be outcompeted by invasive species. Staff would also receive appropriate training and information about the importance of appropriate practices to preserve Northern Coastal Salt Marsh habitat, which would further avoid and/or minimize the potential for impacts to this habitat (**ES and SNR-12: Environmental Training**).

No permanent loss of salt marsh habitat is expected to result from Project activities, but there would be some temporary degradation of salt marsh habitat which could affect special-status species that reside in these areas. Potentially significant impacts include temporary disturbance of salt marsh habitat during lock access/egress, and placement of excavated sediment/soil and silt during berm maintenance and other excavating and stockpiling activities. With respect particularly to USACE permitting requirements for the proposed Project, mitigation for these potential adverse effects to salt marsh habitats and federally listed species associated with these Project activities was satisfied under the Mitigation in Perpetuity agreement with USACE (File Number 19009S98) as discussed in further detail in Impact BIO-1. As described in greater detail in Impact BIO-1, it was found that salt marsh disturbed during prior maintenance and operations activities substantially recovered within three years of disturbance with implementation of the BMPs (WRA 2016). Given the efficacy of the BMPs and limited disturbance footprint relative to adjacent salt marsh, this increase of habitat disturbance above the baseline would not cause a significant impact on salt marsh habitat.

No riparian habitat would be adversely affected during Project activities. While the Estuary HAPC is present within the BSA, any effects to this HAPC would be associated with noise impacts during pile driving and turbidity during pile driving and lock ingress/egress activities. These effects would be minimal, temporary, and highly localized, and would be minimized by stockpiling excavated materials during lock ingress/egress into existing stockpile areas, or used for berm fortification and not placed in locations where it could be washed into estuarine habitat and contribute to increases in turbidity (**Lock Ingress/Egress-7: Excavated Material** and **Lock Ingress/Egress-8: Excess Sediment**). To avoid and or/minimize the release of silt within locks to adjacent areas, the hydraulic pressure within the lock and adjacent areas will be equalized so that silt doesn't flush out into adjacent areas (**Lock Ingress/Egress-8: Sediment within Access Cut**). Noise impacts associated with pile driving could impact the suitability of foraging habitat for Pacific Groundfish and Pacific Coast Salmon, thus impacting the Estuary HAPC, but these effects will be temporary in nature and pile driving will be accomplished via direct push or vibratory pile driving methods and not impact pile driving (**ES and SNR-15: Pile Driving**). The noise levels associated with these activities would not appreciably diminish the quality of foraging habitat, and immediately following completion of these activities the foraging habitat would return to normal. With implementation of the BMPs mentioned above, any increases in turbidity would be minimal and would not adversely affect the Estuary HAPC for Pacific Groundfish or Pacific Coast Salmon, and noise would similarly not adversely affect this HAPC. No eelgrass is present within areas of the shoreline in the BSA potentially affected by increased turbidity or sediment removal resulting from Project activities. Project activities have minimal potential to result in increased turbidity, and shoreline areas within the BSA are expansive shallow mudflats which do not provide optimal habitat for eelgrass in the San Francisco Bay; therefore Project activities will not adversely affect the Seagrass or Marine and Estuarine Submerged Aquatic Vegetation HAPCs.

With incorporation of the BMPs identified previously and with mitigation previously provided under the USACE Mitigation in Perpetuity agreement, potential adverse effects to riparian habitats and other sensitive natural communities including HAPCs are considered to be less than significant.

3.4.4.3 Impact BIO-3: Substantial Adverse Effect State- or Federally Protected Wetlands

Less than Significant. As discussed in Section 4.4.1, Environmental Setting, and Impacts BIO-1 and BIO-2, portions of the facilities are located in or adjacent to wetlands that are protected by federal and state legislation. Maintenance work within the Project area has the potential to affect wetlands through excavation, filling, or hydrological interruption. No permanent loss of state or federally protected wetlands is expected to result from Project activities, but there would be some temporary excavation and filling of these areas during lock access/egress and riprap placement, and potential inadvertent fill during berm maintenance activities. These temporary impacts to protected wetlands are considered to be potentially significant. The proposed BMPs have been shown to be effective in restoring salt marsh habitat (WRA 2016), and would ensure that the net area of wetland available remains constant even with the increase in disturbance area over the baseline. With the implementation of the same BMPs identified in Impact BIO-2, substantial adverse effects to state or federally protected wetlands would be avoided and/or minimized. Mitigation for potential adverse effects to federally protected wetlands was satisfied, for the purposes of USACE requirements, under the Mitigation in Perpetuity agreement with USACE (File Number 19009S98) as discussed in Impact BIO-1.

3.4.4.4 Impact BIO-4: Interference with Wildlife Movement or Wildlife Corridors, or Use of Native Wildlife Nursery Sites

Less than Significant. Wildlife movement corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise fragmented by topography, changes in vegetation, and other natural or human inducted factors such as urbanization. Operations and maintenance activities including berm maintenance, placement of materials stockpiles, and lock access/egress have the potential to temporarily fragment habitats and disrupt wildlife movements, particularly for SMHM and salt marsh wandering shrew. These activities would have limited spatial scope over the duration of the proposed 10-year permit term, surrounding adjacent habitat would remain open for wildlife movements, and the Project would result in no change to existing baseline conditions with regard to wildlife movement corridors and native wildlife nursery sites. Therefore, temporary disturbance within the BSA from Project activities is a less than significant impact.

San Francisco Bay is also an important stopover for migratory shorebirds along the Pacific Flyway (Stenzel et al. 2002). Open water within the Bay and the salt ponds provides congregation and foraging habitat for shorebirds, while larger stands of wetland vegetation such as that within the BSA and adjacent Refuge provide habitat for many species. Project activities are similar in scope and duration to existing baseline activities which birds are expected to be habituated to, so continuation of these activities is not expected to interfere with migratory shorebirds' use of the BSA.

The San Francisco Bay serves as a migration corridor for anadromous fish between the Pacific Ocean and spawning habitat, which occurs primarily within the Sacramento and San Joaquin River watersheds, but also in a handful of smaller tributaries to South San Francisco Bay including Alameda Creek. Fish species have potential to use the open water habitat in and around the BSA for migration, foraging, or rearing. The BMPs discussed in Impact BIO-1 will avoid and/or minimize impacts to fish species, but there is also potential for impacts during pile driving, concrete pouring, and pumping of water. These will largely be avoided and/or minimized by appropriately timed activities, proper equipment, and biological monitoring. As discussed in more detail in Impact BIO-1, this includes pumping of water during the fish work window (June – November) to the maximum extent feasible (**ES and SNR-18: Pumping**), which would avoid and/or minimize pumping during migratory movements of steelhead and longfin smelt and avoid and/or minimize the potential for entrainment of these and other fish species. Harbor seals are known to haul out at Mowry Slough and loud activities such as pile driving have the potential to impact hauled-out seals. During active pupping at this haul-out location, a 500-foot activity-free buffer will be implemented around it (**ES and SNR-9: Seal Pupping Buffer**), and this will avoid and/or minimize potential impacts from Project activities. Pile driving will be conducted via pushing piles into sediments or by using a vibratory hammer to the extent feasible (**ES and SNR-15: Pile Driving**) which will avoid and/or minimize noise impacts regardless of time of year that work occurs. If impact pile driving is necessary, a biological monitor will be present, and if a seal or sea lion is observed within 1,000 feet of the activity, work will temporarily cease until the individual(s) have left the buffer area (**ES and**

SNR-16: Biological Monitoring of Pile Driving), further minimizing the potential to impact movement through the vicinity of the Project.

Evaluation of the use of vinyl sheet piles would include the installation of approximately 600 linear feet of vinyl sheet piles along the inboard berm of Pond P2-12, which currently holds MSS (bittern). As the MSS within this pond is expected to not provide suitable habitat to wildlife, there is not expected to be movement between outboard areas and the pond, so movement patterns of special-status species would not be impacted. In addition, the limited area where the piles will be installed relative to the 123 miles of berms (649,440 feet) is 0.09 percent of the total berm length, so only a very small portion of berm areas would be disturbed.

Potential temporary impacts to wildlife movement, wildlife corridors, or wildlife nursery sites resulting from operations and maintenance would be less than significant and do not represent any significant change from existing baseline conditions in the BSA.

3.4.5 Mitigation Summary

The Project, with implementation of the BMPs discussed above, would not result in significant impacts; therefore, no mitigation is required.

3.5 CULTURAL RESOURCES

This section analyzes the impacts associated with the implementation of the proposed Project on the historic and cultural resources of the site and identifies the mitigation measures that would reduce those impacts. Cultural resources are defined as prehistoric and historic sites, structures, and districts, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. For analysis purposes in this section, cultural resources are categorized into two groups: archaeological resources (prehistoric and historical), and historical properties, buildings and districts. *Historical resource*, as defined under CEQA, includes buildings, sites, structures, objects, or districts that may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and are eligible for listing or are listed in the California Register of Historical Resources (CRHR).

3.5.1 Environmental Setting

3.5.1.1 Prehistoric Setting

San Francisco Bay and surrounding marshlands and uplands were used extensively by humans during prehistoric and historic times. The region has been inhabited for more than 10,000 years. Before circa A.D. 1770, at the time of the first major European contact, the San Francisco Bay region was occupied by Coast Miwok, Patwin, Bay Miwok, and Costanoan/Ohlone Native American people. The Costanoan/Ohlone population in 1770 has been estimated at 7,000. Archaeological remains related to the prehistoric occupation of the area are evidenced by hundreds of shellmounds and occupation sites that lined the shores of the San Francisco, San Pablo, and Suisun Bays. The locations of these shellmounds approximately follow the current shoreline, but also line major tributaries feeding into the Bay. Native people were known to produce and use the naturally-occurring salt that exists along the Bay (Moratto 1984, City of Newark 2013).

Shellmounds are mounds or deposits containing shells, animal bones, and potentially human remains and other evidence of pre-historic settlement of an area. Many of the shellmounds known to be located around the Bay have been found in close relationship with marshy areas. A number of known shellmounds stand partially below current sea level, indicating that their accumulations began during lower water level occurrences in the past. Given the long duration both of the Bay water rise and human occupation of the shore zone, it is likely that earlier use and occupation sites, such as shellmounds, are present below current sea levels (Moratto 1984).

3.5.1.2 Historic Setting

Spanish explorers are said to have first visited the entrance to the Bay in 1769. Travel from the sea into the Bay first occurred in 1775. Spanish and Mexican exploration in the late 1700s and in the 1800s led to the establishment of permanent settlements along the coast of California, mostly in the form of missions and later, Ranchos. Spanish explorers came into increasing contact with Native Americans in the first half of the 1770s as expeditions were led through the region. Mexico gained independence from Spain in 1821 and California changed from Spanish to Mexican control. The decline of the missions allowed for the rise of extensive ranching along the California coast as well as the Sacramento Valley area. What was Native American land became more than 500 land grants (Ranchos) distributed to prominent California families. Then followed a time period of skirmishes and battles between the Mexican army and Native Americans. This and parceling of the land into Ranchos, along with epidemics of smallpox and malaria that spread through Native populations resulted in the further decimation of the Native population and culture (USACE 2015, USFWS and CDFW 2007).

California became a part of the United States as a result of the Mexican-American war that ended in 1848. During the Gold Rush (lasting from 1849 to approximately 1855), there was a large population increase of emigrants, immigrants, and gold seekers to California. The importance of maritime shipping in the Project vicinity continued throughout the Gold Rush and all succeeding historical periods. Cities grew around the Bay along with associated infrastructure. The solar salt industry in San Francisco Bay began in the mid-1850s. By 1900, significant portions of marshland on the western edge of Newark had been diked, bermed, and converted to salt evaporation ponds. The Leslie Salt Company, precursor to Cargill, traces its history back to operations started in Newark in 1936 (City of Newark 2013). Ownership of salt plants was consolidated during the first part of the 20th century and Cargill is now the only solar salt producer in the San Francisco Bay.

3.5.2 Regulatory Setting

are described in Table D-1. State regulations that govern cultural and historical resource aspects of the Project include CEQA and the Health and Safety Code, as well as BCDC's laws and policies. Federal regulations that would be applicable to this area include the Archaeological Resources Protection Act, National Historic Preservation Act, and Federal Antiquities Act of 1906. BCDC regulations and local goals, policies, and/or regulations applicable to this issue area are summarized below.

3.5.2.1 San Francisco Bay Plan

The Bay Plan (BCDC 2020) provides a number of findings and policies pertaining to cultural resources, as described below.

- **Findings and policies pertaining to Environmental Justice and Social Equity Finding c.** – The Commission recognizes that California Native American communities have also faced many environmental injustices and social inequities. However, the Commission has not dedicated institutional resources to tribal issues and cultivating relationships with California Native American communities. As a result, these issues have not been addressed in the Bay Plan. The Commission acknowledges the need to build these relationships and address tribal issues going forward.
- **Environmental Justice and Social Equity Finding j.** – Drawing on the expertise of environmental justice and community-based organizations, the Commission has committed to the following guiding principles to integrate environmental justice and social equity into its mission. The Commission will:

  Recognize and acknowledge the California Native American communities who first inhabited the Bay Area and their cultural connection to the natural resources of the region.

- **Climate Change Policy 6.i.** – The entities that formulate the regional strategy are encouraged to consider the following strategy and goal – advance regional sustainability, encourage infill development and job creation, provide diverse housing served by transit, and protect historical and cultural resources.
- **Water-Related Industry Policy 5.c.** – Important Bay overlook points, and historic areas and structures that may be located in water-related industrial and port areas, should be preserved and incorporated into the site design, if at all feasible.

3.5.2.2 County General Plans

No Alameda County General Plan goals or policies in the area of cultural and historical resources are applicable to the Project site. The San Mateo County General Plan (County of San Mateo 1986) contains the following relevant goals and objectives:

- Goal and Objective 5.3 – Protection of Archaeological/Paleontological Sites
- Goal and Objective 5.20 – Site Survey Protection of Archaeological/Paleontological Sites
- Goal and Objective 5.21 – Site Treatment Protection of Archaeological/Paleontological Sites

3.5.2.3 City of Fremont General Plan

The City of Fremont's General Plan (City of Fremont 2011) contains one relevant goal: Goal 4-6 – Historic Preservation and Cultural Resources Conservation and enhancement of Fremont's historic sites, buildings, structures, objects, and landscapes into the 21st Century and beyond. Goal 4-6 is supported by the following relevant policies: Policy 4-6.1 – Protection of Historic Resources, Policy 4-6.3 – Resource Documentation, and Funding and Policy 4-6.10 – Protection of Native American Remains.

3.5.2.4 City of Hayward General Plan

The City of Hayward's General Plan (City of Hayward 2014) contains Goal LU-8 – Preserve Hayward's historic districts and resources to maintain a unique sense of place and to promote an understanding of the regional and community history. Also relevant are policies LU-8.13 – Planning Study Considerations and NR-1.4 – Shoreline Protection and Enhancement.

3.5.2.5 City of Menlo Park General Plan

The City of Menlo Park General Plan (City of Menlo Park 2016) has numerous policies and one goal pertaining to cultural resources. These include Policy LU-7.8 – Cultural Resource Preservation, Policy OSC3.1 – Prehistoric or Historic Cultural Resources Investigation and Preservation, Policy OSC3.2 – Prehistoric or Historic Cultural Resources Protection, Policy OSC3.3 – Archaeological or Paleontological Resources Protection, Policy OSC3.5 – Consultation with Native American Tribes, and Goal OSC3 – Protect and Enhance Historic Resources. In addition Policy OSC3.4 – Prehistoric or Historic Cultural Resources Found During Construction requires that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.

3.5.2.6 City of Newark General Plan

The City of Newark's policy pertaining to historic resources is Goal LU-5 – Identify, preserve, and maintain historic structures and sites to enhance Newark's sense of place and create living reminders of the City's heritage (City of Newark 2013). Goal LU-5 is supported by policies Policy LU-5.1- Preserving Important Buildings, Policy LU-5.2 – Context-Sensitive Design, and Policy LU-5.5 – Native American Resources. Policy LU-5 requires coordination with local tribal representatives and the Native American Heritage Commission to ensure the protection of Newark's Native American resources and to follow appropriate mitigation, preservation, and recovery procedures in the event that important resources are identified during development.

3.5.2.7 City of Redwood City General Plan

The City of Redwood City General Plan (City of Redwood City 2010c) contains the following goals and policy pertaining to cultural resources:

- Goal BE-36 – Identify, study, and document historic resources.
- Goal BE-37 – Protect, preserve, restore, rehabilitate, and/or enhance historic resources.
- Policy BE-37.1 – Enhance, restore, preserve, and protect, as appropriate, historic resources throughout the city.

3.5.3 Impact Analysis

Potential impacts to cultural resources would be considered significant if implementation of the proposed Project would do any of the following:

- Cause a substantial adverse change in the significance of a historical resource
- Cause a substantial adverse change in the significance of an archaeological resource, or
- Result in the disturbance of Native American human remains

These significance criteria were used to conduct the impact analysis below.

3.5.3.1 Impact CUL-1: Substantial Adverse Change in the Significance of a Historical Resource

No Impact. Records searches of all pertinent survey and document data were conducted of the California Historical Resource Information System (CHRIS) at the Northwest Information Center, Sonoma State University on November 21, 2019 and on January 28, 2020. The records searches indicated that three recorded buildings and one structure were found in or adjacent to the proposed Project area along the east side of San Francisco Bay – a boat house, hunter's cabin, pump house/environmental education classroom, and Brine Pumps. Further, the search indicated that a recorded historic District[7] and a building are found near to the proposed Project along the west side of the Bay. Project activities would not affect those buildings or structures.

[7] A "recorded district" is a grouping of buildings that have been described, typically evaluated, and found to be historic as a District instead of as individual buildings.

A historic resource evaluation of the Ravenswood Salt Ponds/Menlo Park Equalization Basin Levees was completed in 2018, adjacent to the Project area on the west side of the Bay. The analysis was conducted as part of a historic resource evaluation for the West Bay Sanitary District Levee Project (MIG 2018). The evaluation concluded that the integrity of the levees had been lost due to the infill of soil in 1951 and the levees were not determined to qualify as historic (Templar 2018). A historic resource evaluation was also completed.

No evaluation for historical significance of the Project site/salt pond system itself has been performed. However, the Project would not result in substantial changes to the berms or overall site.

Six potential historical resources have been identified at or near the Project area. Two structures, the boat house (P-01-010611) and hunter's cabin (P-01-010612), are located along the north side of Newark Slough and were evaluated for eligibility for the National Register of Historic Places (NRHP) in 2003 (Speulda 2003). The analysis concluded that the buildings did not meet eligibility criteria for the NRHP. Neither was analyzed for historical significance at the state or local level. It would appear unlikely that they would qualify for the CRHR, due to the findings in the analysis that the buildings lack integrity of materials and setting, particularly the boat house, and do not meet the criteria for eligibility for the NRHP. In addition, they are not locally listed as historic buildings.

The pump house/environmental education classroom (P-01-010572) is located along the north side of Newark Slough, south of Dumbarton Road. It was also evaluated for eligibility for the NRHP in 2003 (Speulda 2003). The report concluded that the building does not appear to meet eligibility for the NRHP. It was not analyzed for historical significance at the state or local level. It would appear unlikely that it would qualify for the CRHR because the analysis found that it does not appear to meet the NRHP eligibility criteria as it has lost its connection to the salt industry and has been altered. In addition, the building is not locally listed as historic.

The Archimedes screw brine pumps (P-01-010962) were described in a cultural resources survey completed in 2009 (PAR Environmental Services 2009). The remains of the two wind-powered brine pumps are located in what was termed an "abandoned salt evaporation pond" in the Don Edwards San Francisco Bay National Wildlife Refuge approximately 500 meters south of the Dumbarton Bridge and north of the Hetch Hetchy Aqueduct. The brine pumps were not evaluated for historical significance. This 2009 survey also identified other known or potential cultural resources at or near the Project, including a portion of the Project area itself (the salt evaporation ponds), as well as the Hetch Hetchy Aqueduct, the South Pacific Coast Railroad route, a spur off of the rail line, and the Southern Pacific Railroad Dumbarton Cutoff. The Hetch Hetchy Aqueduct has been previously evaluated as NRHP-eligible, and is therefore assumed to be eligible for the CRHR, but was not evaluated for local historical significance. The other potential resources were not evaluated for historical significance.

In addition, an area to the east and north of components of the Redwood City Plant, termed the "Ravenswood Salt Works District" (P-41-2351), was evaluated for eligibility for the NRHP in 2007. The area was found to be ineligible for the NRHP (Speulda-Drews 2007). A brine pump house (P-41-00204) was reviewed for eligibility for the NRHP and was also found ineligible for the NRHP (Speulda-Drews 2014).

The proposed Project would not affect any of the potential historical resources identified by previous surveys because its proposed maintenance activities would not entail altering those resources and would not cause a substantial adverse change in the significance of a historical resource.

3.5.3.2 Impact CUL-2: Substantial Adverse Change in the Significance of an Archaeological Resource

Less than Significant with Mitigation. Records searches of all pertinent survey and document data were conducted of the CHRIS at the Northwest Information Center, Sonoma State University on November 21, 2019 and on January 28, 2020. The records searches indicated that the majority of the Project site has not been surveyed for archaeological resources. However, various cultural resource surveys and investigations have been completed in nearby areas over many years. No previously recorded archaeological resources have been identified on the Project site; however, recorded Native American prehistoric sites have been recorded near the Project areas located along both sides of San Francisco Bay. One site (CA-ALA-59) near the Mowry Slough was described in the PAR Environment Services 2009 survey; however, it was not re-located during the survey. Eight other recorded archaeological sites are found approximately one to two miles east of Newark Plants 1 and 2 and south and southwest of Plant 2 located along the eastern side of San Francisco Bay (CA-ALA-12, -13, -331, -333, -332, -328, -329, and -392). At least nine recorded archaeological sites are found within one to two miles south and southeast of the Redwood City Plant, brine pipeline alignment and the Redwood City Maintenance Pond located on the western side of San Francisco Bay (CA-SMA-83, -160, -242, -235, -275, -248, -305, -386/H, and P-41-438).

The majority of the Project area is located in Holocene (beginning 12,000 – 11,500 years ago) San Francisco Bay mud. Due to the location of the Project site along the Bay, where Native American shellmound sites are typically located, and the existence of known cultural resources in close proximity to the site, there is a high potential for unrecorded Native American archaeological resources to exist in and near the Project area. Other historical archaeological resources could also potentially be located on the site. Project activities, such as berm coring and excavation (berm cuts) for lock access/egress, would take place within berms and other areas that have already been highly disturbed. If archaeological resources are located in berms, any such materials would likely have been separated from the original archaeological site(s). While any potential individual artifacts may be found to be historically significant, the location or archaeological site where the artifact may have been located previously in the Bay Mud would have been disturbed.

Berm coring would take place over the 10 years of the proposed Project and would result in the removal of about 90 cubic yards/100 linear feet of coring, with an estimated average of around 1,000 to 1,100 linear feet of berm coring per year. While the total amount of berm coring would be less than that conducted over the past 10 years, berm coring would occur in new areas. Some berm materials are composed of Bay Mud which could include archaeological resources. Material removed from the berm cores is placed on the inside berm slopes of salt ponds. Some activities could take place in undisturbed soil/sediment that could be as shallow as 2 feet and as deep as 7 feet below the top of the berm. Soil removed during coring could potentially contact archaeological resources. It is possible that unidentified archaeological remains are present on the Project site. If excavation activities took place in undisturbed areas or even partially disturbed areas, historically significant archaeological resources could be discovered. Damage to such cultural resources would be considered a significant impact.

- **Mitigation Measure (MM) CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources.**

  These mitigation measures shall be printed on contract specifications for field workers for maintenance projects. Cargill, Incorporated shall inform all personnel in writing through the contract specifications and verbally at any Project initiation meetings connected with soil and ground-disturbing maintenance activities of the possibility of finding archaeological resources.

  All site workers shall be trained to recognize potential buried artifacts and shall be informed about the appropriate procedures should buried artifacts or human remains be encountered. Documentation of the contract specification and training shall be provided to BCDC if requested by BCDC. Since material removed from the berm cores would be placed on the inside berm slopes of salt ponds, this moved material and other material (soils or Bay Mud) that may be moved from one location to another on the Project site shall be reviewed on its surface for the existence of archaeological materials.

  If buried cultural resources, such as chipped or ground stone, obsidian, animal bones, shells or shell pieces consistent with those found in Native American shellmounds, historic debris, building foundations, or other items are discovered inadvertently during soil or ground-disturbing activities, such as coring berms or excavating sediment for lock access, work shall stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with BCDC, other agencies, and Native American representatives, as appropriate. Material removed through berm coring or other material shall be viewed by construction staff, as feasible based on placement, to determine if cultural resources were encountered during such activities. If recommended by a qualified archaeologist or cultural resource specialist, further excavation activities shall be monitored by an archaeologist and shall also, if advised by the archaeologist, include a Native American monitor.

  Project personnel shall not collect cultural resources found. Prehistoric cultural material includes, but is not limited to, chert or obsidian flakes; projectile points; mortars and pestles; dark friable soil containing shell and bone dietary debris; heat-affected rock; human burials; shell midden deposits; hearth remains; and bone, stone and/or shell artifacts. Historical material including but not limited to stone or adobe foundations or walls; structures and remains with square nails; whole or fragmentary ceramic, glass or metal objects; or wood, nails, brick, or other materials may occur within the Project area in deposits such as old privies, dumps, or even as part of the fill. Any identified cultural resources shall be recorded on DPR 523 historic resource recordation forms. The disposition of any such items discovered shall be determined by BCDC through recommendations provided by an archaeologist or cultural resource specialist, and in consultation with a Native American representative, if recommended by the archaeologist or cultural resource specialist.

3.5.3.3 Impact CUL-3: Disturbance of Human Remains

Less than Significant with Mitigation. Given the location of the Project area, there is a high potential for unrecorded Native American archaeological resources to exist within the Project area. Therefore, there is a potential for inadvertently uncovering human remains. With implementation of mitigation measure MM CUL-2, this impact would be less than significant.

- **MM CUL-2: Inadvertent Encounter of Human Remains.**

  If human remains are encountered, the County coroner shall be contacted immediately. If the County coroner determines that the remains are Native American, the coroner shall contact the Native American Heritage Commission within 24 hours (pursuant to Section 7050.5 of the California Health and Safety Code.) There shall be no further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent human remains until the County Coroner is contacted and the Coroner has determined that the remains are not subject to provisions of the law regarding the investigation of the circumstances, manner and cause of death. The NAHC shall provide BCDC and Cargill, Incorporated with the contact information for the most likely descendant who will have the opportunity to make a recommendation within 24 hours after being notified by the NAHC as to how the remains shall be treated and their disposition. If any human remains are encountered, the remains shall be left in place and protected from further disturbance until a plan for their disposition can be developed. Pursuant to Section 7050.5(b), if the remains are not Native American and not subject to investigation as described above, the Coroner shall recommend treatment and disposition of the remains to the person responsible for the excavation.

3.5.4 Mitigation Summary

Implementation of the following mitigation measures would reduce potential Project-related impacts to less than significant.

- MM CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources
- MM CUL-2: Inadvertent Encounter of Human Remains

3.6 GEOLOGY AND SOILS

3.6.1 Environmental Setting

3.6.1.1 Regional Setting

The proposed Project site lies within the Coast Ranges geomorphic region. Much of the Coast Ranges are composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys running subparallel to the San Andreas Fault Zone. Terraces and alluvial fans border the ridges of the Coast Ranges before they intersect the San Francisco, San Pablo, and Suisun Bays and merge into tidal flats along the bay margins. The geomorphology of the region includes parts of three prominent, northwest-trending geologic/geomorphic features, which include, from west to east, the Santa Cruz Mountains, the Santa Clara Valley, and the Diablo Range. The Santa Clara Valley forms part of an elongated structural block (the San Francisco Bay block) within the central Coast Ranges that contains San Francisco Bay and its surrounding alluvial margins. This structural block is bounded by the San Andreas Fault to the southwest and the Hayward-Calaveras Fault zone to the northeast.

3.6.1.2 Project Setting

Soils

South San Francisco Bay is a north-northwest-trending subsiding basin that is filled primarily with Quaternary alluvium (stream) deposits eroded from the surrounding margins and estuarine sources (Bay mud). The Sangamon and Holocene Bay muds are separated by Quaternary alluvium and aeolian (wind-blown) sand deposits. Alluvium deposits consist of sediments eroded from the surrounding Santa Cruz Mountains and Diablo Range uplands. These alluvial sediments were transported and deposited by streams and include a mixture of sands, gravels, silts, and clays with highly variable permeability. In contrast, the fine-grained Bay muds have very low permeability. The youngest Holocene Bay muds underlie almost the entire original Bay (Atwater et al. 1977; Helley et al. 1979). Estuarine (Bay) muds were deposited in San Francisco Bay during high sea level periods of the Sangamon (70,000 to 130,000 years ago) and the Holocene (less than 11,000 years ago) eras (Atwater et al. 1977).

The soils in the Project area on the east side of San Francisco Bay (Newark Plants and Pond B-3C) are classified as primarily Novato Clay series with smaller pockets of Reyes clay and Pescadero clay (NRCS 2018). Soils within the Redwood City Plant area as well as the Cargill West Bay areas are also classified as Novato clay series. The Novato Clay series consists of deep, very poorly drained soils that formed in alluvium deposited along the margin of bays. Novato soils are located in tidal marshes and have nearly level slopes (0–2 percent). These soil types are generally saturated with water all times of the year (NRCS 2018). Both Reyes clay and Pescadero clay are very deep, poorly or very poorly drained soils that formed on basin rims in alluvium that derived from sedimentary rock. Pescadero clay was evaluated by the U.S. Department of Agriculture (USDA) for a number of potential uses ranging from building development to wildlife habitat. The only use options that received good or favorable ratings were “pond reservoir areas” and “wildlife habitat.” Most potential use options received poor or unfavorable ratings, including the construction of "embankments, dikes and levees." The USDA analysis for potential uses of Reyes clay is very similar to Pescadero clay (WRA 1994).

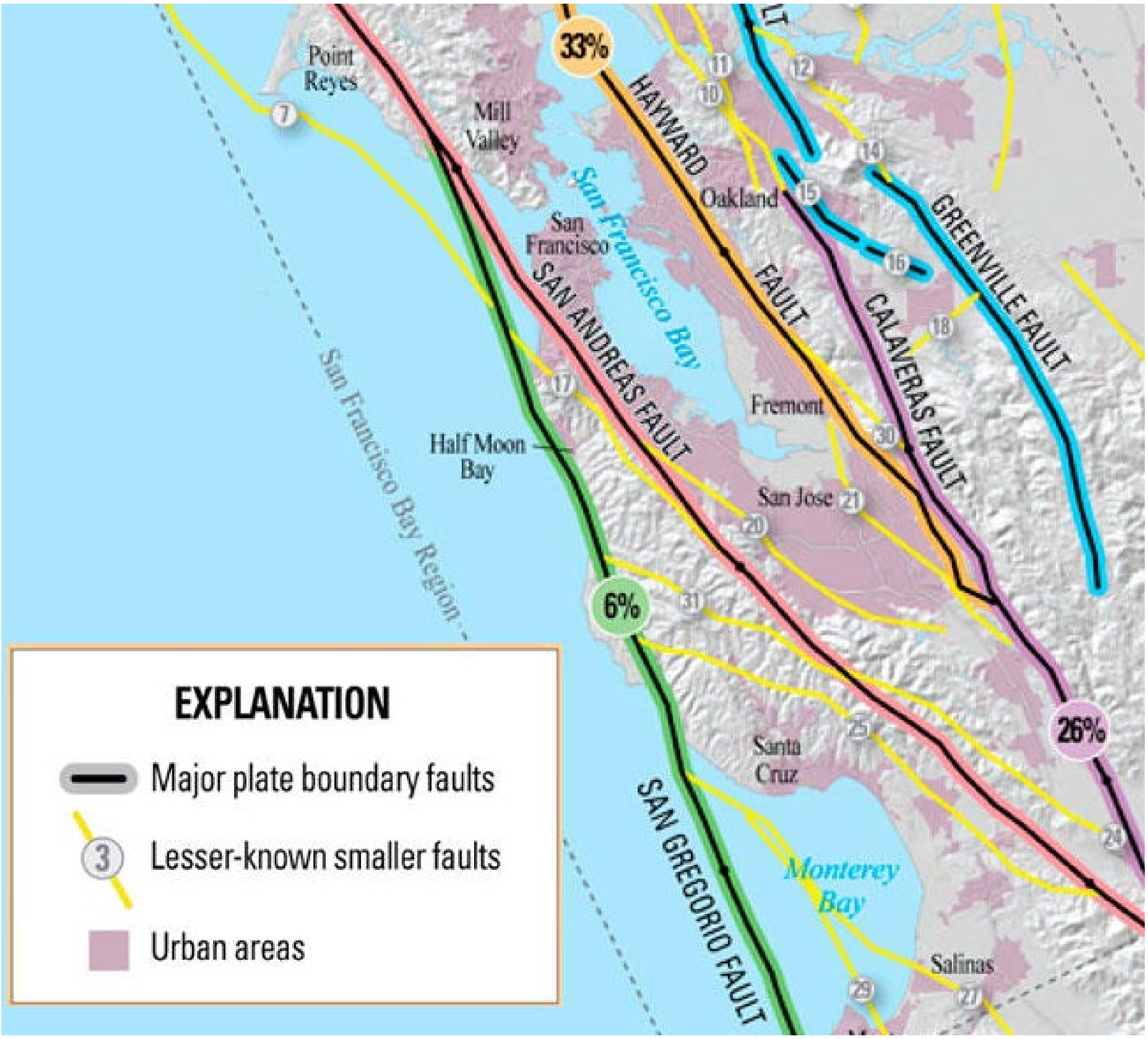
Most of the areas surrounding Cargill's facilities have subsided since Cargill's berms were originally constructed. Land subsidence in southern San Francisco Bay and the Santa Clara Valley can be attributed to the overdrafting of aquifers during the first half of the twentieth century. Some areas have subsided as much as 8 feet between 1934 and 1967, and subsidence in the Project area generally ranged from 0 to 4 feet. U.S. Geological Survey monitoring has determined that no additional subsidence has occurred since 1973 (Poland and Ireland 1988; USGS 2020). Cargill continues to maintain the heights of berms by adding clean imported material or material from the salt ponds as needed.

Faults and Seismicity

The proposed Project is located in the seismically active San Francisco Bay region. The San Francisco Bay region is situated on a plate boundary marked by the San Andreas Fault System, which consists of several northwest-trending active and potentially active faults. Scientists have developed a new earthquake forecast model for California, referred to as the third Uniform California Earthquake Rupture Forecast, or "UCERF3". The new model provides authoritative estimates of the magnitude, location, and likelihood of earthquake fault rupture throughout the state. UCERF3 is the latest model from the Working Group on California Earthquake Probabilities (WGCEP) (WGCEP 2014). According to the UCERF3, the probability of one or more earthquakes of magnitude 6.7 or higher occurring in the San Francisco Bay Area within the next 30 years (starting in 2014) is 72 percent (Field and WGCEP 2015). The likelihood of a magnitude 6.7 or greater earthquake occurring along individual faults is 14.3 percent for the Hayward-Rodgers Creek Fault, 6.4 percent for the Northern San Andreas Fault, and 7.4 percent for the Calaveras Fault.

Some of the major regional active faults found by the California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act to be "active" (i.e., to have evidence of fault rupture in the past 11,000 years) include the San Andreas, Hayward-Rodgers Creek, Concord, and Calaveras faults. These faults, which are within the San Andreas Fault Zone (SAFZ), have caused severe ground shaking in the past and have the potential to do so in the future. The Project site could be subjected to damage from movement on any one of the regional active faults which are shown in Figure 3.6-1. The Hayward and Calaveras faults run parallel to the Newark Plants' eastern border; however, no major active faults are known to cross the salt ponds or production facilities. The closest active fault to the Project area is the Hayward fault. The Newark Plants are approximately 3.5 miles west of the Hayward fault and 12 miles east of the San Andreas fault. The Redwood City plant is approximately 13 miles west of the Hayward fault and 6 miles east of the San Andreas fault.

Other faults in the vicinity of the Project site include the Silver Creek fault, Palo Alto fault, and Stanford fault. All of these faults are concealed, potentially active Quaternary faults that have evidence of displacement sometime during the past 1.8 million years. These faults have less potential for surface rupture. The Redwood City Plant and Newark Plants are located approximately 2 miles and 8 miles east, respectively, of the Stanford fault. The Silver Creek fault traverses the southeastern edge of Newark Plant 2 in a north/south trending direction while the Palo Alto fault traverses the northern edge of Redwood City Plant site.



Source: *USGS 2017: https://www.usgs.gov/media/images/map-known-active-faults-and-earthquake-probabilities*

Figure 3.6-1. Faults in the Vicinity of the Project Area

Landslides

A landslide is a mass of rock, soil, and debris displaced down-slope by sliding, flowing, or falling. The susceptibility of land to slope failure depends on the slope and geology as well as the amount of rainfall, excavation or seismic activities. Steep slopes and down-slope creep of surface materials characterize areas most susceptible to landslides. Landslides can cause severe damage to structures. Inertial forces from earthquake ground shaking can also reduce the stability of a slope and cause sliding or falling of soil or rock.

The Project area has a nearly flat topography. There are no significant hills or steep slopes surrounding the Project. In addition, the CGS's Seismic Hazard Mapping Program reports no landslide hazard areas within the Project area. The potential for a landslide in the Project area is extremely low.

Soil Erosion and Expansive Soils

Soil erosion is the loss of soil due to running water or wind; the greatest risk typically occurs in areas with steep slopes and exposed soils. Rates of erosion can vary depending on the soil material and structure, placement and human activity. Erosion is most likely on sloped areas with exposed soil, especially where unnatural slopes are created by cut and fill activities. Soil erosion rates could therefore be higher during maintenance activities.

Expansive soils contain clays and therefore possess a "shrink-swell" characteristic. Shrink-swell is the cyclic expansion and contraction that occurs in fine-grained clays from the process of wetting and drying. Damage to structures may occur over time if structures placed directly on expansive soils are not designed properly. The coarse- and medium-grained Holocene alluvial deposits found in the Project area contain less detrital expansive clay and are not intensely weathered; therefore, they have moderate or low shrink-swell potential.

Lateral Spreading and Differential Settlement

Lateral spreading refers to landslides that typically occur on gentle slopes and have rapid fluid-like flow movement. There are no gently sloping areas within the Project site.

Differential settlement occurs when soil settles unevenly, particularly after liquefaction. Differential settlement occurs because the soil layers that liquefy are not of a uniform thickness, or because there are considerable differences in soil composition. Differential settlement can also occur when geological materials are improperly compacted during construction. Differential settlement is of concern because it can damage structures.

3.6.1.3 Seismic Hazards

Seismic hazards include surface fault rupture, ground shaking, and ground failure including liquefaction and landslides, as described below.

Surface Fault Rupture

Seismically induced ground rupture is defined as the movement of the ground along one side of a fault relative to the other side as the result of an earthquake. The magnitude and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults. Potential surface fault rupture hazards exist along the known active faults in the greater San Francisco Bay Region. The faults that have been identified by the CGS as potential surface rupture hazards in close proximity to the South San Francisco Bay include the San Andreas and Hayward faults. These faults show historical (last 200 years) displacement associated with mapped surface rupture or surface creep. None of the Project area is within an earthquake fault zone as defined by the Alquist-Priolo Act, and therefore the Project area is not expected to experience surface rupture.

Ground Shaking

Ground movement intensity during an earthquake varies depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Sites close to the zone of fault rupture typically experience stronger motion than similar sites located farther away. Site soils can amplify ground motion in certain frequency ranges and can dampen ground motion within other frequency ranges. Soft soils sites, such as the Holocene Bay Mud and Quaternary alluvium, aeolian deposits, and older Pleistocene Bay mud located in the Project area, could amplify ground motions in the long period range compared to stiff or firm soils sites. Although the Project area is not located in an Alquist-Priolo Earthquake hazard zone, the area could still experience strong ground shaking from nearby faults.

Liquefaction

Liquefaction is the sudden temporary loss of shear strength in saturated, loose to medium-density granular sediments subjected to ground shaking. When liquefaction occurs, it can cause foundation failure of buildings and other facilities. The potential for liquefaction depends on a number of factors including the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and elevation of the groundwater. Generally, looser deposits have the potential to densify more as a result of ground shaking and are subject to larger volumetric changes. Additionally, thicker deposits would accumulate more volumetric change than thinner deposits. The Project area has a moderate susceptibility for liquefaction (Witter et al. 2006). The entire Project area is within a liquefaction zone as defined by the California Department of Conservation (2019).

Seismically-Induced Landslides

The susceptibility of sloped lands to failure during an earthquake is dependent on the level of ground shaking, underlying geology, thickness of alluvial material, and degree of saturation. Inertial forces from earthquake ground shaking can reduce the stability of a slope and cause sliding or falling of soil or rock. The Project area is relatively flat with low potential for seismically-induced landslides.

3.6.2 Regulatory Setting

Federal and state laws and regulations pertaining to this resource area and relevant to the Project are described in Table D-1. State regulations that govern geotechnical and geological aspects of the Project include the Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act. The California Building Code (CBC) would apply if a significant, permanent structure were to be constructed; however, none are proposed. The McAteer-Petris Act Section 66605(e) requires that "public health, safety, and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters." In addition, the Bay Plan contains policies that may be applicable to this resource area.

3.6.2.1 San Francisco Bay Plan

Bay Plan (BCDC 2020) policies that may be applicable to this resource include, but are not limited to, the following:

Safety of Fills Findings a. To reduce risk of life and damage to property, special consideration must be given to construction on filled lands in San Francisco Bay. (Similar hazards exist on the poor soils throughout the Bay Area, including soft natural soils, steep slopes, earthquake fault zones, and extensively graded areas.)

Safety of Fills Findings b. Virtually all fills in San Francisco Bay are placed on top of Bay mud. Under most of the Bay there is a deep, packed layer of old Bay mud. More recent deposits, called younger Bay mud, lie on top of the older muds. The top layer of young mud presents many engineering problems. The construction of a sound fill depends in part on the stability of the base upon which it is placed.

Safety of Fills Findings c. Safety of a fill also depends on the manner in which the filling is done, and the materials used for the fill. Similarly, safety of a structure on fill depends on the manner in which it is built and the materials used in its construction. Construction of a fill or building that will be safe enough for the intended use requires: (1) recognition and investigation of all potential hazards-including (a) settling of a fill or building over a long period of time, (b) ground failure caused by the manner of constructing the fill or by shaking during a major earthquake, and (c) height above high water level-and (2) construction of the filling or building in a manner specifically designed to minimize these hazards. While the construction of buildings on fills overlying Bay deposits involves a greater number of potential hazards than construction on rock or on dense hard soil deposits, adequate design measures can be taken to reduce the hazards to acceptable levels. Similarly, while the construction of a building on fill over the Bay or on the shoreline can involve tidal flooding risk because of extreme high water levels, storms, and rise in sea level, adequate project design measures can be taken to minimize the hazards to an acceptable risk.

Safety of Fills Findings d. There are no minimum construction codes regulating construction of fills on Bay mud because of the absence of sufficient data upon which to base such a code. Hazards vary with different geologic and foundation conditions, use of the fill, and the type of structures to be constructed on new fill areas. Therefore, the highest order of skilled judgment, utilizing the available knowledge of all affected disciplines, is required to: (1) recognize and investigate all potential hazards of constructing a fill; and (2) design the fill and any construction thereon to minimize these hazards.

Safety of Fills Policy 4. Adequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project. The BCDC may approve fill that is needed to provide flood protection for existing projects and uses.

Major Conclusion and Policy 9 (Fill Safety). Virtually all fills in San Francisco Bay are placed on top of Bay mud. The construction of buildings on such fills creates a greater number of potential hazards to life and property, during normal settling and during earthquakes, than does construction on rock or on dense, hard soil deposits. Adequate design measures can be taken, however, to reduce these potential hazards to acceptable levels.

Shoreline Protection Policy 1. New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, or (ii) proposed development, use or infrastructure that is consistent with other Bay Plan policies; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the causes and conditions of erosion and flooding at the site; (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; (e) the protection is integrated with current or planned adjacent shoreline protection measures; and (f) adverse impacts to adjacent or nearby areas, such as increased flooding or accelerated erosion, are avoided or minimized. If such impacts cannot be avoided or minimized, measures to compensate should be required. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design.

Other local goals, policies, and/or regulations applicable to this issue area are summarized below.

In the City of Fremont General Plan (City of Fremont 2013), the following policy may be applicable:

- Policy 10-1.3: Limits on Grading - Prohibit excessive and unnecessary grading activity, especially in areas of potential landslide risk as identified on State and local geologic hazard area maps or as identified during site reconnaissance.

The City of Hayward's General Plan contains Goal HAZ–2 - Protect life and minimize property damage from potential seismic and geologic hazards (City of Hayward 2014).

The Menlo Park General Plan (City of Menlo Park 2016) has the following geologic and seismic safety policy that may be applicable to the Project:

- S1.14 Potential Land Instability. Prohibit development in areas of potential land instability identified on State and/or local geologic hazard maps, or identified through other means, unless a geologic investigation demonstrates hazards can be mitigated to an acceptable level as defined by the State of California.

The City of Newark General Plan (City of Newark 2013) contains the following policy applicable to the Project:

- Policy EH-3.2 Maintaining Drainage Patterns. Prohibit development, grading, and land modification activities that would adversely affect Newark's drainage system or create unacceptable erosion impacts.

The City of Redwood City General Plan (City of Redwood City 2011) contains Policy PS-6.1 which identifies structural types, land uses, and sites that are highly sensitive to earthquake activity and other geological hazards, and seeks to abate or modify them to achieve acceptable risk.

3.6.3 Impact Analysis

Potential impacts to geology and soils would be considered significant if implementation of the proposed Project would do any of the following:

- Expose people or structures to potential substantial adverse effects involving earthquake fault rupture, seismic ground shaking, or seismic-related ground failure, including liquefaction
- Create substantial soil erosion or loss of topsoil, or
- Result in Project facilities being located on unstable or expansive soils

These significance criteria are used in the impact analysis below.

3.6.3.1 Impact GEO-1: Exposure of People or Structures to Potential Substantial Adverse Effects Involving Earthquake Fault Rupture, Seismic Groundshaking, or Seismic-related Ground Failure, including Liquefaction

The Project site is not zoned as an Earthquake Fault Zone under the Alquist-Priolo Act. Although concealed potentially active Quaternary faults (Silver Creek and Stanford) traverse the edges of the Project area, these faults have low potential to generate surface fault ruptures. The impact from a potential rupture of a known earthquake fault would be less than significant.

The Project site is located in an area that has the potential to be subject to violent ground shaking from an earthquake along any of the active faults located in the region, including the Hayward Fault, the closest major fault to the Project area. However, the proposed Project does not include construction of any habitable structures that could potentially be damaged or cause injury or death. Workers may be subject to ground shaking in the event that a significant earthquake occurred during the Project activities. The primary hazards typically associated with ground shaking and liquefaction are falling objects, collapsing structures, or obstacles created as a result of ground shaking. The maintenance areas generally lack features that could fall or collapse, thereby limiting exposure to these types of hazards. Slightly raising the existing berms to address SLR would not change the likelihood of effects from violent ground shaking.

For the proposed SLR study, approximately 600 feet of vinyl sheets will be installed along the inboard side of the berms along Pond 12. The vinyl sheets will be installed for structural reinforcement and are meant to protect the berm against SLR and storm surges. The vinyl sheets are considered a modernized imported material compared to Bay mud, and can be effectively used to enhance the berm. If the vinyl sheets fail, such failure would not pose a risk to people or structures. Impacts associated with seismic ground shaking would be less than significant.

If unplanned breaching of pond berms occurred during or a result of an earthquake flooding impacts could result. However, there has been no known historic record of shoreline berm failure in the study area due to earthquakes. Even the intense seismic activity associated with the Loma Prieta Earthquake of 1989 only resulted in minor cracking and settling of the salt pond berms (USFWS and CDFW 2007). Because the Project proposes continued maintenance of the salt ponds and facilities, thereby maintaining the existing level of structural stability, the Project would prevent an increase in the likelihood of such an occurrence. After an earthquake, areas of settlement and other damage to berms would be repaired as part of its ongoing maintenance requirements. Therefore, the impact to people or structures from ground shaking would be expected to be less than significant.

The Project site is located in an area mapped as having a moderate potential for liquefaction (Witter 2006). Liquefaction could cause portions of berms to settle below minimum elevations, allowing them to be overtopped. The proposed Project would not significantly alter the existing site conditions such that liquefaction would be more likely to occur. If the Project is approved, Cargill would be able to perform ongoing maintenance of ponds and facilities which would prevent an increase in the potential for berm failure or damage to other salt production facilities as a result of seismic ground failure. Berms would be repaired after seismic events, including any occurrence of liquefaction or lateral spreading. Therefore, the potential impact to people or structures from seismic-related ground failure, including liquefaction, is less than significant.

3.6.3.2 Impact GEO-2: Substantial Soil Erosion or Loss of Topsoil

The Project area has potential for soil erosion and loss of topsoil due to high wind/wave energy. The Project proposes ongoing maintenance and repair of areas where erosion is occurring. Clean, imported material would first be placed within the zone of erosion, then filter fabric would be placed over the material and riprap would be placed as the final erosion prevention layer. Abiding by the BMPs shown in Section 2 would further minimize potential for soil erosion. This impact would be less than significant.

3.6.3.3 Impact GEO-3: Location on Unstable or Expansive Soils

Given that the salt production facilities are built on Bay mud soils, liquefaction, collapse, and ongoing settlement are a potential concern. Some priority berms would be raised slightly up to approximately 12 inches) as part of the proposed SLR adaptation efforts. Raising the berms this amount is consistent with past berm maintenance efforts and, based on the ages of the berms and past experience with maintaining berms, would not be expected to cause substantial settlement. Any structures would be designed for an appropriate level of seismic resistance.

The Project would allow for continued maintenance on a regular basis of the berms and other salt production facilities in the Project area. In addition, the installation of the vinyl sheets for the study would increase the resilience of the berms where the sheet pile is located and minimize the risk of a release of brine into the Bay. By providing a rigid barrier near the top of the elevation of the berm, storm surge could flow over the berm without scouring the core of the berm. BMPs will be employed during the installation of the study and well as all other ongoing maintenance. Maintenance activities proposed as part of this Project would assure that ongoing settlement is not affecting operational safety and that typical berm elevations and profiles are being maintained. The proposed Project would not construct any new buildings. New culverts and bridges within the salt production areas would be designed and constructed in accordance with applicable engineering standards considering the site soil characteristics. Therefore the impact from the proposed Project would be less than significant.

3.6.4 Mitigation Summary

The Project would not result in any potentially significant impacts to geology and soils; no mitigation is required.

3.7 GREENHOUSE GAS EMISSIONS

3.7.1 Environmental Setting

Greenhouse gases (GHGs) are atmospheric gases that capture and retain a portion of the heat radiated from the earth after it has been heated by the sun. The primary GHGs are carbon dioxide (CO_2), methane, nitrous oxide (N_2O), ozone, and water vapor. While GHGs are natural components of the atmosphere, CO_2, methane, and N_2O are also emitted in considerable quantities from human activities, and their accumulation in the atmosphere over the past 200 years has substantially increased their concentrations. This accumulation of GHGs has been identified as the driving force behind global climate change. Human emissions of CO_2 and N_2O are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with organic decay processes in agriculture, landfills, etc. as well as hydrocarbon processing (e.g., refineries). Other GHGs, including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, are generated by certain industrial processes.

CO_2 is the most common reference gas for climate change. To account for the warming potential of GHGs, GHG emissions are often quantified and reported as carbon dioxide equivalents (CO_2e). With the warming potential of CO_2 set at a reference value of 1, methane has a warming potential of 28-36 (i.e., one ton of methane has the same warming potential as 28-36 tons of CO_2, while N_2O has a warming potential of 265-298 (USEPA 2021). There is widespread international scientific consensus that human-caused increases in GHGs have and will continue to contribute to climate change, although there is uncertainty concerning the magnitude and rate of the warming.

Climate change is having widespread impacts on California's economy and environment, and will continue to affect communities across the state in the future. Documented effects of climate change in California include increased average, maximum, and minimum temperatures; decreased spring run-off to the Sacramento River; more severe droughts; extensive wildfires; shrinking glaciers in the Sierra Nevada; warmer temperatures in major lakes such Lake Tahoe, Clear Lake, and Mono Lake; and changes in elevations for plant and animal species (OEHHA 2018).

The San Francisco Bay Area as a whole emitted an estimated 95.8 million metric tons of CO_2e in 2007 (BAAQMD 2010) and 86.6 million metric tons of CO_2e in 2011 (BAAQMD 2015). Of the 2011 emissions, 83.9 million metric tons of CO_2e ($MMTCO_2e$) were emitted within the Bay Area Air District and 2.7 $MMTCO_2e$ were indirect emissions from imported electricity (BAAQMD 2015). GHG emissions estimates by local jurisdictions are provided below.

3.7.1.1 Alameda County GHG Emissions Inventory

Alameda County conducted a calendar year 2003 baseline GHG emissions inventory for County government operations and unincorporated communities. The total emissions were estimated to be 797,125 metric tons of carbon dioxide equivalents (MT CO_2e), comprised of 736,579 MT from unincorporated communities and 60,546 MT from government operations (Alameda County 2008). The 2010 Update revised the emissions from government operations slightly, to 62,997 MT CO_2e (Alameda County 2010).

3.7.1.2 San Mateo County GHG Emissions Inventory

San Mateo County prepared an updated 2005 baseline emissions estimate reflecting updated BAAQMD requirements. Emissions from county sources totaled 905,090 MT CO_2e in the baseline year 2005. Transportation is the largest contributor at 53 percent, producing approximately 479,400 MT CO_2e in 2005 (San Mateo County 2012a).

3.7.1.3 City of Fremont GHG Emissions Inventory

In 2007-2008, the City of Fremont conducted an evaluation of GHG emissions from City facilities and the Fremont community using a 2005 baseline. The inventory showed a total GHG emissions baseline of 1,698,000 MT CO_2e. In January 2014, Fremont completed an update of GHG emissions, demonstrating a decrease of 11 percent in community-wide emissions between the years of 2005 and 2010, to 1,516,500 MT CO_2e. Commercial and industrial energy use comprised 23 percent of the GHG emissions, while transportation was the largest contributor, at 58 percent (City of Fremont 2014).

3.7.1.4 City of Hayward GHG Emissions Inventory

The City of Hayward has conducted four emissions inventories, for calendar years 2005, 2010, 2015, and 2017. The most recent inventory, for calendar 2017, showed a net reduction of 14.6 percent from the 2005 baseline, from 1,082,982 MT CO_2e to 924,581 MT CO_2e (City of Hayward 2020).

3.7.1.5 City of Menlo Park GHG Emissions Inventory

The City of Menlo Park completed its baseline GHG emissions inventory in 2005, which showed that it generated 349,284 tons of GHG emissions. The 2020 GHG emissions target is 254,977 tons, or a 94,307-ton reduction. Menlo Park currently conducts annual net emissions inventories (City of Menlo Park 2020). The most recent data shows that between 2005 and 2017, GHGs decreased to 284,378 MT CO_2e, an 18.6 percent reduction (Menlo Park 2019).

3.7.1.6 City of Newark GHG Emissions Inventory

The City of Newark has also conducted a 2005 baseline emissions inventory. The inventory showed that in 2005 the Newark community emitted approximately 433,860 MT CO_2e. Approximately 44 percent were attributable to transportation, with State highways in and adjacent to Newark accounting for 24 percent of the total emissions (56.4 percent of the transportation sector emissions). Industrial and commercial activity accounted for a total of 40.4 percent of Newark emissions (City of Newark 2010).

3.7.1.7 City of Redwood City GHG Emissions Inventory

Redwood City has completed two baseline emission inventories, using different methodologies. Both methodologies excluded some emissions, such as emissions associated with the Port of Redwood City. One estimate was prepared using the Clean Air and Climate Protection software developed by Local Governments for Sustainability (ICLEI), and the other used GIS-based INDEX software. The ICLEI-based-inventory concluded that transportation, housing, commercial and industrial activities, and waste processing emitted 669,737 MT CO_2e equivalent in 2005. The INDEX estimate estimated that Redwood City emitted 747,000 MT CO_2e in 2008 (City of Redwood City 2010a).

3.7.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. California has passed multiple laws pertaining to climate change and GHGs, most notably the California Global Warming Solutions Act of 2006 (AB 32), which requires that State GHG emissions be reduced to 1990 levels by 2020. Statewide strategies to reduce GHG emissions to attain the 2020 goal include: the Low Carbon Fuel Standard, California Appliance Energy Efficiency regulations, the California Renewable Energy Portfolio standard, and changes to the motor vehicle corporate average fuel economy (CAFE) standards. In addition, the Bay Plan contains policies that focus on the effects of climate change.

The BAAQMD's *Clean Air Plan: Spare the Air, Cool the Climate* (2017 Plan; BAAQMD 2017a), focuses on two closely- related goals: protecting public health from air pollutant exposures and protecting the climate. Consistent with the GHG reduction targets adopted by the State of California, the 2017 Plan lays the groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

The 2017 Plan defines an integrated, multipollutant control strategy to reduce emissions of ozone precursors, particulate matter, TACs, and GHGs.

The 2017 Plan GHG control strategy is based on the following key priorities:

- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel and natural gas).
    - Increase efficiency of the energy and transportation systems.
    - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
    - Make the electricity supply carbon-free.
    - Electrify the transportation and building sectors.

In addition to the BAAQMD's 2017 Plan, local Climate Action Plans are prepared by local governments, as shown below.

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD 2017b) specify methodologies for CEQA GHG analysis/mitigation and set a CEQA significance threshold of 1,100 metric tons/year of CO_2e on project operational GHG emissions. The BAAQMD's *Guidelines* threshold was chosen by the BAAQMD based on substantial evidence (i.e., as detailed in *California Environmental Quality Act–Guidelines Update - Proposed Thresholds of Significance*, BAAQMD 2009) that the environmental impact of the GHG emissions below this threshold will normally not be cumulatively considerable under CEQA. Thus, all CEQA projects' compliance with this threshold will assure that the Bay Area's cumulative GHG emissions will not interfere with the State's ability to meet its goal of reduced statewide GHG emissions under AB32. The BAAQMD's *Guidelines* methodology and threshold of significance have been used in this analysis of the Project's potential GHG impacts.

3.7.2.1 San Francisco Bay Plan

BCDC's Bay Plan also addresses climate change, but focuses on regional-scope approaches to addressing the effects rather than the cause.

Bay Plan policies and findings that may be applicable to this resource include, but are not limited to, the following:

- **Climate Change Finding g.** In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks … Implementing many adaptation strategies will require action and funding by federal, state, regional and local agencies with planning, funding and land use decision-making authority beyond the Commission's jurisdiction.
- **Climate Change Finding u.** Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission can collaborate with the Joint Policy Committee to assure that the Bay Plan Climate Change policies are integrated with the emerging Sustainable Communities Strategy and other regional agencies' policies that deal with climate change issues.
- **Climate Change Policy 6.f.** The Commission, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.

  The entities that formulate the regional strategy are encouraged to consider the following strategies and goals: … integrate regional mitigation measures to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change.
- **Climate Change Policy 7.** Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts.

Given the multi-factor and regional-scale significance of GHG emissions, Climate Change Findings g and u, as well as Policy 6.f, recognize that various jurisdictional regulatory entities should develop a regional strategy that integrates regional mitigation measures to reduce GHG emissions.

3.7.2.2 Alameda County Climate Action Plans

The Alameda County (Unincorporated Areas) Community Climate Action Plan, approved in 2014, addresses reduction of GHG emissions through 37 local programs and policy measures related to transportation, land use, building energy, water, waste, and green infrastructure. The goal of the plan is to reduce County-wide GHG emissions by 15 percent below the 2005 levels by 2020, and to set the County on a pathway to achieve an 80 percent reduction by 2050. A parallel plan was developed to address government operations (the *Alameda County Climate Action Plan for Government Services and Operations*). The Community Climate Action Plan was incorporated into the General Plan when it was approved in 2014 (Alameda County 2014).

3.7.2.3 San Mateo County Climate Change Initiatives

San Mateo County addresses climate change both in its general plan and in its climate action plan.

General Plan

San Mateo County's General Plan includes a voluntary Energy and Climate Change Element (San Mateo County 2013a). The strategies and goals in the Energy and Climate Change Element are targeted at unincorporated San Mateo County, and therefore do not apply to the Project area.

Climate Action Plans

The County has two Climate Action Plans in place – a Government Operations Climate Action Plan and a Community Climate Action Plan. The Government Operations Climate Action Plan (San Mateo County 2012b) focuses on the County's facilities and operations and has a goal of achieving a 15 percent reduction in GHG emissions by the year 2020. The Community Climate Action Plan, also known as the Energy Efficiency Climate Action Plan (San Mateo County 2013b), has a target of reducing GHG emissions 17 percent below 2005 baseline levels by 2020. The Office of Sustainability is currently working with the Planning and Building Department to update the existing Community Climate Action Plan (San Mateo County 2020).

3.7.2.4 City of Fremont Climate Change Initiatives

The City of Fremont addresses climate change both in its general plan and in its climate action plan.

General Plan

The General Plan 2030 (City of Fremont 2011) incorporates sustainability as the central theme throughout the document. Both the Sustainability Element and the Conservation Element of the Update address climate-related policies.

Climate Action Plan

The Fremont City Council adopted its Climate Action Plan in November 2012. The plan sets a GHG emissions reduction goal of 25 percent from 2005 levels by the year 2020 (City of Fremont 2012).

3.7.2.5 City of Hayward Climate Action Plan

The City of Hayward General Plan also functions as a climate action plan. Climate Action Plan actions are contained in the Natural Resources element of the General Plan (City of Hayward 2014). The City of Hayward's GHG reduction goals are 20 percent below 2005 baseline levels by 2020, 61.7 percent below 2005 baseline levels by 2040, and 82.5 percent below 2005 baseline levels by 2050 (City of Hayward 2014).

3.7.2.6 City of Menlo Park Climate Action Plan

The City of Menlo Park General Plan (City of Menlo Park 2016) includes actions to promote sustainability, the Climate Action Plan and Climate Action Plan Assessment Reports provide strategies and actions to reduce GHG emissions. Menlo Park's Climate Action Plan was adopted in 2009 and set a GHG emissions reduction target of 27 percent below 2005 levels by 2020. The city continues to update the Climate Action Plan to reflect technological advancements and legislative changes. The most recent update was in 2018 (City of Menlo Park 2020).

3.7.2.7 City of Newark Climate Action Plan

The City of Newark Climate Action Plan Initial Framework was adopted in January 2010. The Climate Action Plan sets targets for GHG emissions reductions from City of Newark activities and community emissions. The Plan sets a target of a 15 percent reduction in emissions from the 2005 baseline by 2020 (a total of 65,038 MT CO_2e) to be consistent with the State's target of reducing emissions to 1990 levels by 2020 (City of Newark 2010). The document states that the Plan is intended to be a dynamic document that will evolve and be reevaluated on a regular basis; however, no updates have been issued.

3.7.2.8 City of Redwood City Climate Action Plan

Redwood City's Community Climate Action Plan (City of Redwood City 2010b) sets a target of reducing GHG emissions by 15 percent from the 2005 baseline level by the year 2020, i.e., reduction of 100,466 MT CO_2e.

3.7.3 Impact Analysis

Potential impacts associated with GHGs would be considered significant if implementation of the proposed Project would do either of the following:

- Generate significant quantities of GHGs as defined in BAAQMD CEQA guidance, or
- Conflict with an adopted applicable plan, policy or regulation for reducing GHG emissions

The BAAQMD's *CEQA Air Quality Guidelines* specify a CEQA threshold of significance for Project operational GHG emissions at 1,100 metric tons/year of CO_2e. The *Guidelines* methodology and thresholds of significance have been used in this analysis of potential GHG impacts.

The impact analysis below considers potential Project impacts relative to the two significance criteria.

3.7.3.1 Impact GHG-1: Generation of Significant Quantities of Greenhouse Gases

Less than Significant Impact. The *CEQA Air Quality Guidelines* recommend quantification of operational GHG emissions using the California Emissions Estimator Model (CalEEMod). This was done for sixteen identified maintenance activities essential to the salt works' existing and proposed future operation. Off-road equipment and vehicular pollutant emission rates were taken from CalEEMod (Version 2016.3.2, Appendix D). Marine emission factors were taken from *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California* (CARB 2012).

Baseline GHG emissions were estimated for the thirteen identified maintenance activities associated with the existing salt works during a typical year, as shown in Table 3.7-1 (in metric tons/year).

Table 3.7-1. Cargill Solar Sea Salt System Maintenance - Baseline Greenhouse Gas Emissions (in metric tons/year)

Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
Berm Grading	Off-Road	102.67	0.03	0.00	103.73
	On-Road	0.00	0.00	0.00	0.00
	Marine	0.00	0.00	0.00	0.00
	Total	102.67	0.03	0.00	103.73
Maintain Berm Height/ Width	Off-Road	40.47	0.01	0.00	40.89
	On-Road	1.80	0.00	0.00	1.80
	Marine	0.00	0.00	0.00	0.00
	Total	42.27	0.01	0.00	42.69
Compact Internal Core of Berm	Off-Road	55.22	0.02	0.00	55.79
	On-Road	2.40	0.00	0.00	2.40
	Marine	0.00	0.00	0.00	0.00
	Total	57.62	0.02	0.00	58.19
Making Berms Drivable	Off-Road	26.05	0.01	0.00	26.32
	On-Road	2.40	0.00	0.00	2.40
	Marine	0.00	0.00	0.00	0.00
	Total	28.45	0.01	0.00	28.72
Outboard Erosion Repair	Off-Road	20.71	0.01	0.00	20.92
	On-Road	3.15	0.00	0.00	3.15
	Marine	0.00	0.00	0.00	0.00
	Total	23.85	0.01	0.00	24.07
Interior Erosion Repair	Off-Road	20.71	0.01	0.00	20.92
	On-Road	3.15	0.00	0.00	3.15
	Marine	65.54	0.01	0.00	65.97
	Total	89.40	0.02	0.00	90.04

Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
Lock Access	Off-Road	1.47	0.00	0.00	1.49
	On-Road	0.27	0.00	0.00	0.27
	Marine	3.98	0.00	0.00	4.01
	Total	5.72	0.00	0.00	5.76
Vinyl Sheet Pile Installation	Off-Road	20.74	0.01	0.00	20.95
	On-Road	1.20	0.00	0.00	1.20
	Marine	0.00	0.00	0.00	0.00
	Total	21.94	0.01	0.00	22.15
Minor Earthmoving Activities	Off-Road	8.35	0.00	0.00	8.41
	On-Road	0.30	0.00	0.00	0.30
	Marine	0.00	0.00	0.00	0.00
	Total	8.65	0.00	0.00	8.71
Repair of Water Control Structures	Off-Road	13.93	0.00	0.00	14.04
	On-Road	0.60	0.00	0.00	0.60
	Marine	0.07	0.00	0.00	0.07
	Total	14.60	0.00	0.00	14.71
Repair of Access Structures	Off-Road	5.62	0.00	0.00	5.65
	On-Road	0.60	0.00	0.00	0.60
	Marine	0.00	0.00	0.00	0.00
	Total	6.22	0.00	0.00	6.25
Minor Maintenance and Repair	Off-Road	2.54	0.00	0.00	2.56
	On-Road	0.30	0.00	0.00	0.30
	Marine	0.00	0.00	0.00	0.00
	Total	2.84	0.00	0.00	2.86
Algae Removal from Ponds	Off-Road	0.78	0.00	0.00	0.79
	On-Road	1.09	0.00	0.00	1.09
	Marine	1.78	0.00	0.00	1.80
	Total	3.65	0.00	0.00	3.67
All Maintenance Activities	**Off-Road**	**319.26**	**0.10**	**0.00**	**322.47**
	On-Road	**17.25**	**0.00**	**0.00**	**17.25**
	Marine	**71.38**	**0.01**	**0.00**	**71.85**
	Grand Total	**407.88**	**0.12**	**0.00**	**411.57**

Note:

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents

Net new Project incremental GHG emissions were estimated for the expansion of one maintenance activity category and the addition of three new identified maintenance activities associated with the salt works continued operation under the BCDC permit, as shown in Table 3.7-2 (in metric tons/year). Project incremental GHG emissions are estimated for the three most important types of GHGs associated with the Project for each maintenance activity category for which activities can be expected to result in increases of GHG emissions above baseline conditions in a typical year, then converted to CO_2e, and the total compared with the BAAQMD CEQA significance threshold (in annual metric tons of CO_2e)and with baseline GHG emission levels (for reference). The incremental emissions are below the BAAQMD threshold; thus, Project GHG emission impacts would be less than significant.

Table 3.7-2. Cargill Solar Sea Salt System Maintenance - Project Incremental GHG Emissions (in metric tons/year)

New/Additional Project Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
Address Priority Berms for SLR	Off-Road	40.47	0.01	0.00	40.89
	On-Road	1.80	0.00	0.00	1.80
	Marine	0.00	0.00	0.00	0.00
	Total	42.27	0.01	0.00	42.69
Additional Lock Access	Off-Road	3.32	0.00	0.00	3.35
	On-Road	0.60	0.00	0.00	0.60
	Marine	8.95	0.00	0.00	9.01
	Total	12.87	0.00	0.00	12.96
Sediment Removal from Intakes	Off-Road	5.20	0.00	0.00	5.26
	On-Road	1.20	0.00	0.00	1.20
	Marine	11.99	0.00	0.00	12.08
	Total	18.39	0.00	0.00	18.54
Re-establishing Vehicle Access on Internal Berms	Off-Road	26.69	0.01	0.00	26.96
	On-Road	2.40	0.00	0.00	2.40
	Marine	0.00	0.00	0.00	0.00
	Total	29.09	0.01	0.00	29.36
Net New Emissions from New/Additional Project Maintenance Activities	**Off-Road**	**75.68**	**0.02**	**0.00**	**76.46**
	On-Road	**6.00**	**0.00**	**0.00**	**6.00**
	Marine	**20.94**	**0.00**	**0.00**	**21.10**
	Total	**102.62**	**0.03**	**0.00**	**103.56**
	Significance Thresholds	**-**	**-**	**-**	**1,100**
	Significant Impact?	**N/A**	**N/A**	**N/A**	**No**

New/Additional Project Maintenance Activity	Emission Source	CO_2	CH_4	N_2O	CO_2e
	Comparison with Baseline Maintenance Activities Emissions	**+25%**	**+25%**		**+25%**
	Baseline GHG Emissions	407.88	0.12	0.00	411.57

Notes:

CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalents; SLR = sea level rise
N/A = not applicable

3.7.3.2 Impact GHG-2: Conflict with an Adopted Applicable Plan, Policy or Regulation for Reducing Greenhouse Gas Emissions

No Impact. The Project would be below the CEQA threshold for GHG emissions and would not conflict with the GHG reduction strategies of local communities, the 2017 Plan (BAAQMD 2017a), or the State of California’s Climate Change policies. Project impacts would be less than significant.

3.7.4 Mitigation Summary

There would be no significant impacts, and no mitigation is required.

3.8 HAZARDS AND HAZARDOUS MATERIALS

3.8.1 Environmental Setting

This section addresses potential hazards associated with soil and/or groundwater contamination, and other potential human health hazards posed by maintenance operations at the berms and locks. High-salinity brine and mixed sea salts are not classified as a hazardous waste, and therefore potential releases of brine are discussed in Section 3.12 under water quality impacts.

The use of hazardous materials during maintenance operations is limited to small amounts of fuel (diesel and gasoline), oils (penetrating, lubricating, and hydraulic) and vehicle batteries. Equipment used to conduct maintenance operations throughout the Project area is serviced in maintenance operations facilities and not on the berm or lock areas, and thus not adjacent to or on the water. However, there could be incidental releases of hazardous materials from maintenance equipment into the environment. Cargill and its contractors are required to prepare and implement a Spill Prevention Plan, a SWPPP, and BMPs (Section 2.12) for all maintenance activities. Implementing these plans and measures reduces the potential for spills or other incidents and provides for effective response in the unlikely event of a spill.

A search was conducted for potential hazardous waste sites near or on the Project area using the California State GeoTracker website (SWRCB 2020). This website identifies cleanup sites, hazardous material sites, sites with leaking underground storage tanks, and permitted sites, including Resource Conservation and Recovery Act (RCRA) Hazardous Waste Sites, throughout California. The Project site is not listed as a hazardous substance site. A 500-foot search radius of the Newark Plant Sites, the Redwood City Plant, and Cargill West Bay areas was conducted in February 2020 to identify any hazardous materials sites. A search of the Newark Plant sites showed one permitted Hazardous Waste/Storage site located approximately 500 feet north of Pond CX-21 (Newark Plant Site 2) at 6880 Smith Avenue in Newark. No releases of hazardous wastes are documented at this facility. Morton Salt, located at 7380 Central Avenue (currently registered as Overton Moore Properties), is part of a Cleanup Program Site[8] and its cleanup status is listed as "Open Site Assessment" which means site characterization, investigation, risk evaluation, and/or site conceptual model development are occurring at the site. The site is approximately 1,100 feet from Pond CX-19. Low to moderate levels of total petroleum hydrocarbons in the diesel range were detected in shallow soil and grab groundwater samples collected from the site in 2017; remedial excavation was conducted in 2018. Ongoing groundwater monitoring is currently being conducted at the site (SWRCB 2020).

The closest site to the Redwood City Plant is an open cleanup program site, 3723 Haven Avenue Development, located approximately 350 feet south of the edge of Pond RC-7C. It is listed as

[8] Cleanup Program Sites: includes all "non-federally owned" sites that are regulated under the State Water Resources Control Board's Site Cleanup Program and/or similar programs conducted by each of the nine Regional Water Quality Control Boards. Cleanup Program Sites are also commonly referred to as "Site Cleanup Program sites." Cleanup Program Sites are varied and include but are not limited to pesticide and fertilizer facilities, rail yards, ports, equipment supply facilities, metals facilities, industrial manufacturing and maintenance sites, dry cleaners, bulk transfer facilities, refineries, mine sites, landfills, RCRA/CERCLA cleanups, and some brownfields.

Open Site Assessment. Site investigation is currently occurring to delineate the extent of a trichloroethylene plume at the site and evaluate additional remedial actions necessary to address constituents of concern for future site redevelopment. A permitted hazardous waste transfer/storage facility (Clean Harbors Environmental Services Port of Redwood City) is located at 695 Seaport Blvd., approximately 600 feet west of Pond RC-1. One cleanup program site is located within 500 feet of the Cargill West Bay areas. This site, the Sun Microsystems Site, is listed as Open Inactive, meaning no regulatory oversight activities are being conducted. It is located approximately 600 feet east of the brine pipeline on the Facebook campus.

Schools are considered potential sensitive receptors with regard to hazardous materials releases. The closest schools to the Project area are Delaine Easton Elementary School (east of Pond B-3C) and Newark Memorial High School (northeast of Pond CX-22); both are located approximately ¾ mile from the site. Small quantities of hazardous materials, primarily fuels, would be used during ongoing maintenance of the Project. These materials are in common use, and would be managed in accordance with all applicable rules and regulations.

Preparation of a Traffic Management Plan when needed would ensure that there is no interference with an adopted emergency response or evacuation plan. Should emergency response be required on a recreational trail, any maintenance equipment that could impact emergency vehicle access would be relocated. If maintenance equipment would block recreational trails, the affected trail would be closed for the short period of time while the maintenance activities are occurring in that location (refer to Section 3.11.3, Transportation/Impacts Analysis).

3.8.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Local goals, policies, and/or regulations applicable to this issue area are summarized below.

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency or if it has characteristics defined as hazardous by such an agency. At the state level, a hazardous material is defined in Title 22 of the California Code of Regulations. The USEPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are contained mainly in CFR Titles 29, 40, and 49. Management of hazardous materials is governed by the following laws (which are described below):

- Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S. Code [USC] 6901 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC 9601 et seq.)
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499)

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials.

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration of the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials.

The California Department of Toxic Substances Control (DTSC), a division of the California Environmental Protection Agency (CalEPA), has primary regulatory responsibility over hazardous materials in California, working in conjunction with the USEPA to enforce and implement hazardous materials laws and regulations. The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code § 25100 et seq.), which is implemented by regulations described in CCR Title 26. The state program thus created is similar to but more stringent than the federal program under RCRA.

The provisions of Government Code Section 65962.5 are commonly referred to as the “Cortese List.” The Cortese List is a planning document used by state and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires CalEPA to develop and update the Cortese List annually, at minimum. DTSC is responsible for a portion of the information contained in the Cortese List. Other California state and local government agencies are required to provide additional hazardous material release information for the Cortese List.

3.8.2.1 San Francisco Bay Plan

Major Conclusion and Policy 8 (Water Quality) of the Bay Plan (BCDC 2020) states that “Because of the regulatory authority of the State Water Resources Control Board [SWRCB], the San Francisco Bay Regional Water Quality Control Board, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers, the Bay Plan does not deal extensively with the problems and means of pollution control.” Similarly, the Water Quality Finding “o” of the Bay Plan states, in relevant part: “The Department of Toxic Substances Control, [San Francisco Bay] Regional [Water Quality Control] Board, and U.S. Environmental Protection Agency have the primary responsibility for the remediation and cleanup of hazardous substances.” The Bay Plan findings and policies that may be relevant to hazards and hazardous materials are listed below.

Water Quality Finding a. Pollutants are harmful substances that when discharged into the environment adversely affect the environment's physical, chemical, or biological properties. The San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin designates the beneficial uses of the waters of the Bay, such as recreational boating, swimming, fishing, navigation, or aquatic habitat. Pollution occurs when pollutants unreasonably interfere with or adversely affect one or more of these beneficial uses. Pollutants can be divided into two types: point sources and nonpoint sources. Pollutants discharged from a distinct source, such as a pipe, are referred to as point source pollution. Other pollutant discharges are referred to as nonpoint source pollution because the pollution comes from diffuse sources such as oil and grease left on streets, and loose soil from construction sites. Stormwater or irrigation flows across land can transport and deposit pollutants into San Francisco Bay or into tributaries that flow to the Bay.

***Water Quality Finding* i.** The protection of the Bay ecosystem and human health from water pollution requires a comprehensive strategy that encompasses: (1) preventing pollution at its source; (2) controlling and reducing pollution; (3) substituting less toxic chemicals and products in the project development process; and (4) remediating and cleaning up existing contaminants.

***Water Quality Finding* j.** Existing programs for controlling pollution, including stormwater management plans, Total Maximum Daily Load implementation plans, and construction site stormwater runoff and erosion and sediment controls, are effective in preventing and reducing Bay pollution.

***Water Quality Finding* k.** Management measures for controlling, reducing or eliminating nonpoint source pollution include establishing best management practices, such as site planning or structural controls, new technologies, project siting criteria, and operating methods.

Water Quality Policy 1. Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

Water Quality Policy 2. Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Board, should be the basis for carrying out the Commissions water quality responsibilities.

Water Quality Policy 4. When approving a project in an area polluted with toxic or hazardous substances, the Commission should coordinate with appropriate local, state and federal agencies to ensure that the project will not cause harm to the public, to Bay resources, or to the beneficial uses of the Bay.

Water Quality Policy 7. Whenever practicable, native vegetation buffer areas should be provided as part of a project to control pollutants from entering the Bay, and vegetation should be substituted for rock riprap, concrete, or other hard surface shoreline and bank erosion control methods where appropriate and practicable.

Climate Change Policy 5. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.

Safety of Fills Policy 4. Adequate measures should be provided to prevent damage from SLR and storm activity that may occur on fill or near the shoreline over the expected life of a project. The BCDC may approve fill that is needed to provide flood protection for existing projects and uses.

3.8.2.2 Alameda County

The following policy in the Alameda County General Plan Safety Element (amended 2014) may be applicable to the Project:

- *P1.* Uses involving the manufacture, use or storage of highly flammable (or toxic) materials and highly water reactive materials should be located at an adequate distance from other uses and should be regulated to minimize the risk of on-site and off-site personal injury and property damage. The transport of highly flammable materials by rail, truck, or pipeline should be regulated and monitored to minimize risk to adjoining uses.

3.8.2.3 San Mateo County

In the San Mateo County General Plan Hazardous Materials section, the following goals/objectives apply:

- 16.47: Strive to Protect Life, Property, and the Environment From Hazardous Material Exposure.
- 16.48: Strive to Ensure Responsible Hazardous Waste Management.
- 16.49: Strive to Reduce Public Exposure to Hazardous Material.

3.8.2.4 City of Fremont

Every city and county is required by State law to adopt a Hazardous Waste Management Plan. If the county plan is applicable and contains sufficient detail for the city's use, a city may adopt the county plan. The Fremont City Council adopted the Alameda County plan by resolution on July 25, 1989 (City of Fremont 2011). The City, as a Certified Unified Program Agency, regulates the management, handling and storage of hazardous materials and waste. In addition, the following goal and policies from the City of Fremont's general plan (City of Fremont 2011) are applicable to the Project:

- GOAL 10-6: Hazardous Materials and Waste - Minimize feasible risks to life, property and the environment resulting from the use, storage, transportation and disposal of hazardous materials
- Policy 10-6.1: Hazardous Material Regulation
- Policy 10-6.5: Hazardous Material Oversight -
- Policy 10-6.6: Hazardous Material Disclosure

3.8.2.5 City of Hayward

In the City of Hayward General Plan Hazards Element (City of Hayward 2014), the following goal and policies are applicable:

- *Goal HAZ-6:* Protect people and environmental resources from contaminated hazardous material sites and minimize risks associated with the use, storage, transport, and disposal of hazardous materials.
- Policy HAZ-6.1 Hazardous Materials Program.

- Policy HAZ-6.7 Agency Coordination.

3.8.2.6 City of Newark

The following goal and policy in the City of Newark's General Plan area applicable to the Project:

- *GOAL EH-4:* Protect Newark residents and workers from the potential adverse effects of hazardous materials.
- *Policy EH-4-1:* Hazardous Materials Risk Reduction.

3.8.2.7 City of Menlo Park

The City of Menlo Park General Plan contains the following policy applicable to the Project:

- *S1.16 Hazardous Materials Regulations.* Review and strengthen, if necessary, regulations for the structural design and/or uses involving hazardous materials to minimize risk to local populations. Enforce compliance with current state and local requirements for the manufacturing, use, storage, transportation and disposal of hazardous materials, and the designation of appropriate truck routes in Menlo Park.

3.8.2.8 City of Redwood City

In the Redwood City General Plan Public Safety Element (2011), the following policy would apply:

- *Policy PS-8.1*: Establish policies to regulate and reduce hazardous waste within Redwood City that are consistent with the County's Hazardous Waste Management Plan and other County regulatory programs

3.8.3 Impact Analysis

Potential impacts associated with hazards and hazardous materials would be considered significant if implementation of the proposed Project would:

- Transport, use, or dispose of hazardous materials, or
- Create the potential for upset and accident conditions involving the release of hazardous materials

The impact analysis below considers potential Project impacts relative to these significance criteria.

3.8.3.1 Impact HAZ-1: Transport, Use, or Disposal of Hazardous Materials

Less than Significant Impact. The primary hazardous materials concern arises from accidental spills and small amounts of leakage of petroleum products from maintenance vehicles during continued facility maintenance and berm repair. The proposed Project would require the use of the following hazardous materials:

- Fuel (diesel and gasoline)
- Penetrating oils, lubricating oils and hydraulic oils for equipment

- Paint
- Batteries

The proposed Project would not result in any changes from current operations regarding hazardous materials. Because equipment maintenance activities are performed in the maintenance operations facility and not on the berm or lock areas, there is limited opportunity for even small spills of fluids on the berms/soil or in the water. All hazardous materials in the Project area are handled in accordance with applicable regulations.

It is expected that Cargill will continue to comply with federal and state laws and take all necessary precautions to prevent release of hazardous pollutants and will continue to comply with all applicable regulations during maintenance operations and waste disposal, in order to prevent significant hazardous materials impacts. Employees attend annual mandatory environmental training which provides instruction on implementation of safe operating practices as well as required documentation, communications, and reporting. In addition, a Storm Water Pollution Prevention Plan and Annual Work Plans are in place to ensure compliance.

The proposed SLR study would install vinyl sheets to strengthen the berms. The vinyl sheets would be installed with a sealant (De Neef Swellseal) between the sheets to seal the sheet pile knuckles per the manufacturer's instructions. The sealant, which cures and swells in the presence of moisture and water, is solvent-free and is applied with a caulking gun. During installation, a 3/8 inch bead of sealant would be applied to the vinyl sheets driven into the berm, allowing for any excess material to be pushed out the top of the sheet pile and easily wiped off and disposed of if need be (Cargill 2019). Following the manufacture's installation and cleanup instructions would minimize possible product exposure to the environment. The Safety Data Sheet (SDS) for Swellseal for Sheet Piles indicates that it has low to very low hazard ratings. and that the primary active ingredient in the sealant is a volatile compound called toluene diisocyanate (TDI) (it has several other chemical and trade names). Based on an SDS produced by a different manufacturer, TDI is only present at the very low concentration of < 0.1 percent wt/wt and as a volatile product it would be expected to dissipate upon exposure to air (EOA 2019). TDI therefore represents less than 0.1 percent (one part per thousand) by weight of the total weight of the marketed product. In addition, TDI reacts with water to form stable, insoluble polyureas, which are inert solids. The reactivity of TDI with water greatly limits its mobility, and even an accidental spill would be localized and have only transient impacts (EOA 2019). According to a memo from EOA to Cargill (EOA 2019), a Dow Product Safety Assessment for TDI provided some aquatic toxicity testing results which indicated that there would need to be 10 – 100 milligrams per liter (mg/L) of the actual 100 percent TDI active ingredient present to exert the toxicity reported. This is likely several orders of magnitude greater than the amount of TDI that could be released from a vinyl sheet pile seam sealed with Swellsea (EOA 2019). Because the amount of TDI present in the sealant is very low and any TDI that might be released would turn into a predominantly insoluble stable polyurea with limited mobility in soil (particularly in the very low permeability Bay mud contained in the Cargill salt pond berms), EOA concluded that the risk to the environment from use of the sealant in the vinyl sheet pile study is low. This impact would be less than significant.

3.8.3.2 Impact HAZ-2: Potential for Upset and Accident Conditions Involving the Release of Hazardous Materials

Less than Significant Impact. Cargill and its contractors would be required to manage all hazardous materials in accordance with applicable regulations. This includes maintaining a spill response plan and SWPPP, and training employees in spill prevention and response. The contractors would be required to maintain appropriate spill response equipment and materials at their work location if warranted, and to conduct operations involving storage or transfer of hazardous materials, such as fuels, only at the maintenance facility. Adhering to these control measures would minimize potential contamination from accidental spills and protect water quality at the site. Potential impacts associated with reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be less than significant.

3.8.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.9 HYDROLOGY AND WATER QUALITY

3.9.1 Environmental Setting

3.9.1.1 Regional Hydrologic Setting

South San Francisco Bay

The Project area lies within the San Francisco Bay Area Hydrologic Basin, specifically in the South Bay. The South Bay is defined as the portion of San Francisco Bay south of Coyote Point on the western shore and the San Leandro Marina on the eastern shore; these two locations are just north of the San Mateo Bridge. The Bay waters between the San Mateo Bridge and the Dumbarton Bridge can be considered the upper South Bay, and the area below the Dumbarton Bridge, the lower South Bay. The hydrodynamic and water quality descriptions in this section encompass both upper and lower regions of the South Bay given that the Project area includes salt ponds located both above and below the Dumbarton Bridge.

The San Francisco Bay is an estuary receiving its major source of freshwater from the Sacramento-San Joaquin drainage basin which discharges into San Pablo Bay. Minor contributions of freshwater come from local streams and creeks all around the Bay. Freshwater strongly influences environmental conditions in the San Francisco Bay Estuary as it mixes with saltwater from the ocean. Wind and tidal flows also greatly affect the Bay water conditions. Because of these very dynamic and complex environmental conditions, San Francisco Bay supports a very diverse and productive ecosystem.

The South Bay covers an area of approximately 22 square miles at mean higher high water (MHHW). Major features are a central channel, adjacent tidal mudflats and adjoining sloughs fed by local streams and drainages. The average depth in the South Bay is approximately 15 feet and ranges from 40 feet in the entrance channel to a few inches in peripheral mudflats. Strong vertical mixing due to tidal and wind action results in resuspension of particulate matter, and thus generally high turbidity and low transparency (WRA 2007).

The South Bay is the southernmost extreme of the Bay Estuary and furthest removed from Sacramento-San Joaquin Delta (Delta) outflows. Due to this lack of large-scale natural stream flows, circulation and flushing in the South Bay is limited, and this in turn influences many water quality parameters including salinity, turbidity, temperature, dissolved oxygen, and pollutant concentrations.

Hydrodynamics

The South Bay can be characterized as a large shallow basin, with a relatively deep main channel surrounded by broad shoals and mudflats. Tidal currents, wind, and freshwater tributary inflows interact with bathymetry to define the residual circulation patterns and residence time, and determine the level of vertical mixing and stratification. One of the most important factors influencing circulation patterns in the South Bay is bathymetry. Bathymetric variations create different flow patterns between the San Mateo Bridge and Dumbarton Bridge and in areas south of the Dumbarton Bridge (CDFW et al. 2019).

As with all large bodies of water, the most significant daily hydrodynamic action is the daily rise and fall of the tides. The tides in San Francisco Bay are mixed semidiurnal tides (i.e., two high and two low tides of unequal heights each day). There is also an annual cycle, with the strongest spring tides occurring in early summer and early winter, and the weakest neap tides occurring in the spring and fall.

Currents in the South Bay are driven predominantly by tidally- and wind-forced flows and their interaction with the bathymetry. Typically, winds drive a surface flow, which then induces a return flow in the deeper channels. Although density-driven currents are generally uncommon in the South Bay, in years of heavy rainfall, freshwater can flow from the Delta through the Central Bay and into the South Bay. In such events, the freshwater flows southward along the surface, while the more saline South Bay water flows northward along the bottom (CDFW et al. 2019).

The volume of water in the South Bay between mean low water and mean high water is the "tidal prism" of the South Bay. At mean lower low water (MLLW), the volume of water in the far South Bay (south of the Dumbarton Bridge) is less than half the volume present at MHHW. In addition, surface water area coverage at MLLW is less than half that at MHHW, indicating that over half of the far South Bay consists of shallow mudflats exposed at low tides (CDFW et al. 2019).

Berms

Salt pond berms in the South Bay were typically constructed with Bay mud (weak clays and silts) dredged from adjacent borrow ditches or pond areas. Soils were not compacted during construction, and the berms have continued to settle and deform. The berms have been augmented from time to time with Bay mud or imported fill to compensate for subsidence, consolidation of fill material, and weak underlying Bay mud deposits. In general, salt pond berms are low to moderate in height and have fairly flat, stable slopes. Some berms were constructed from imported soil, riprap, broken concrete, and other predominantly inorganic debris, and these berms typically have steeper slopes than the berms constructed of Bay mud.

Outboard berms (i.e., Bayfront and slough/creek berms adjacent to tidal waters) were built to enclose evaporation ponds on former tidal marshes and mudflats and to protect the salt ponds from Bay inundation. Internal berms separate the individual salt ponds from each other and are typically smaller than the outboard berms. Generally, pond berms were not designed, constructed, or maintained following well-defined standards (USFWS and California State Coastal Conservancy 2016).

Flood Hazards

Flood hazards in the South Bay result primarily from coastal flooding (tides, storm surge and wind-wave action) and fluvial flows (rainfall-runoff) from the adjacent watersheds. Coastal flooding normally results from exceptionally high astronomical tides, increased by storm surge, climatic events, and wind-wave action. Coastal flooding can occur when high Bay water levels, in concert with wind waves, lead to erosion and/or overtopping of coastal barriers. The highest astronomical tides occur for a few days each summer and winter due to the relative positions of the earth, moon, and sun. The highest Bay water levels typically occur in the winter when storm surges coincide with the higher astronomical tides. Salt ponds in the South Bay dissipate incident wind-wave action and act as large reservoirs to store overtopped waters. Floods resulting solely from coastal processes have been rare due to the presence of pond berms (USFWS and California State Coastal Conservancy 2016). As discussed in Section 2, the salt pond berms were never engineered or constructed to provide flood protection.

Fluvial flooding occurs when rivers, creeks, and other natural or constructed channels are overtopped. Fluvial flooding has been the primary source of historical flood damage in developed areas adjacent to the South Bay. An extensive network of flood control levees has been constructed along various channel reaches to protect adjacent developed areas from channel overtopping. These leveed reaches are designed to convey large fluvial discharges during high Bay tides; however, the levees can be overtopped when high runoff conditions and high Bay tides exceed the design capacity of the leveed channel. Out-of-bank flooding can also occur in areas adjacent to non-leveed channels when the runoff exceeds the carrying capacity of the channel. Flooding also results from local drainage that collects behind bayfront berms or engineered levees when discharges to the Bay (either by pumps or gravity flow) are inadequate (USFWS and California State Coastal Conservancy 2016).

Salt ponds can act as temporary storage during coastal flooding conditions. Waves break against outboard berms. As ponds fill, waves overtop internal berms sequentially. Although most of the shoreline in the South Bay consists of berms that do not meet the Federal Emergency Management Agency (FEMA) or the USACE flood-protection standards, the absence of a history of significant tidal flooding indicates that these berms do provide some level of flood buffer (USACE 1988, as cited in PWA 2005).

FEMA and USACE have developed flood maps for the South Bay that include delineation of the 100-year floodplain. FEMA delineation of the coastal floodplain in the South Bay is based on the assessment that salt pond berms provide for a reduction of wave action but do not prevent inundation from high Bay water levels. In addition, in the Bay Plan BCDC makes the following finding (Finding e) regarding salt ponds: “The water surface area of the salt ponds supplements the water surface area of the Bay and thus helps to moderate the Bay Area climate and to prevent smog. Further, the salt ponds contribute to the open space character of the Bay and the berms surrounding the ponds, although not designed or maintained for flood control, help to protect adjacent low-lying areas from tidal flooding” (BCDC 2020)

In general, salt pond berms would not meet FEMA criteria and are not certified as flood-protection facilities as defined in FEMA’s certification requirements. If the berms fail and breach flooding of inland areas is likely to occur and there are no calculations to show that the berms are designed for the 100-year event. In addition, FEMA would require a maintenance program for certification, including a commitment by a public entity, and such a program does not exist (CDFW et al. 2019).

<u>Tsunami and Seiche</u>

Tsunamis are long-period, low-amplitude ocean waves that pose an inundation hazard to many coastal areas around the world. In studies done by geophysicist Eric Geist at the USGS and Professor Steven Ward at UC Santa Cruz, hypothetical worst-case tsunami-induced wave heights in San Francisco Bay were evaluated. The models used a tsunami caused by a very large earthquake (greater than 9.0 on the Richter scale) in the Alaska-Aleutian Islands. Modeling results predicted a 16.4-foot wave entering San Francisco Bay at the Golden Gate, but the wave height was quickly reduced to less than 3.2 feet by the time it reached Treasure Island. Model predictions indicate that the tsunami probably would not reach the South Bay and if it did, it would be approximately 6 inches in height. The largest tsunami recorded to reach the San Francisco Bay was in 1964, after a 9.2 earthquake in Alaska. That tsunami entered the Bay at the Golden Gate at a height of approximately 4 feet.

A seiche is a wave that oscillates in lakes, bays, or gulfs from a few minutes to a few hours as a result of seismic or atmospheric disturbances. Tsunami waves can also create seiches when they enter embayments. A 1975 USGS study of seismic risks in San Francisco Bay indicated that a magnitude 6.5 earthquake would be unlikely to generate a seiche in San Francisco Bay (USGS and HUD 1975). Geologically-induced seiche events have not been documented in the Bay and meteorological effects can be quickly dissipated due to the connection with the Pacific Ocean (CDFW et al. 2019).

In the unlikely event that seiche waves in the Bay are large enough to overtop the outboard berms of the salt ponds, the Bay water would flow into the ponds, but pond water would likely not flow out into the Bay. This dynamic would occur for two primary reasons: (1) the ponds are against the eastern shore of the bay, and prevailing winds in San Francisco Bay are almost always from the west or northwest. Thus, winds would blow the waves to the eastern shoreline hitting the salt ponds first, and, (2) the brine levels in the salt ponds are kept below the top of the berms, so any water overtopping the berms would flow to the lower depth and fill the ponds with more Bay water.

Sediment Characteristics

San Francisco Bay, like most bay habitats that contain subtidal shoals, intertidal mudflats, and wetlands, experiences both deposition and erosion of sediment. This can occur consistently or vary over time. The factors that affect deposition versus erosion are sediment availability, and fate and transport. The main losses of sediment from the South Bay are exports to the Central Bay and sediment capture within marsh areas and restored ponds. Although the South Bay as a whole has undergone periods of net deposition and net erosion, the far South Bay below the Dumbarton Bridge has remained largely depositional since bathymetric data collection began in 1857 (CDFW et al. 2019).

Suspended sediment concentrations (SSCs) in the South Bay exhibit short-term variability, primarily in response to variations in tidally driven resuspension, wind-driven resuspension, and riverine input from local tributaries and sloughs (CDFW et al. 2019). In the winter and early spring, the main sources of suspended sediments are local tributaries and the Central Bay. As discussed below, the Bay Area receives most of its annual rainfall from strong winter storms. During extremely wet years, rainfall and spring snow melt can create turbid plumes of sediment from the Delta into the South Bay. This influx of sediment entering the system is continually reworked and transported as it is deposited and resuspended by tidal and wind-driven currents. However, even in the dryer summer months when there is very little direct input of suspended sediment from the Delta, the SSCs are still often high in the South Bay, due to strong afternoon winds across the Bay that increase wind-wave resuspension and reworking of previously deposited sediments (CDFW et al. 2019).

Climate and Precipitation

The South Bay experiences a Mediterranean climate characterized by mild, wet winters and dry, warm summers. Air temperatures are mild due to proximity to the ocean. Winter weather is dominated by storms from the northern Pacific Ocean that produce nearly all the annual rainfall, while summer weather is dominated by sea breezes caused by differential heating between the hot interior valleys and the cooler coast. The climate is generally characterized by relatively cool summers and mild winters. In summer, a steady marine wind blows through the Golden Gate and disperses north, east, and south over the Bay. This moderating influence is reflected in a mean July temperature of 68°F and a mean January temperature of 51°F in the South Bay (based on City of Newark recorded temperatures).

The South Bay, like the rest of the Bay, typically receives about 90 percent of its precipitation in the fall and winter months (October through April), with most of the rainfall occurring in late December through February. The average annual rainfall in the counties surrounding the South Bay is approximately 18 to 20 inches. The actual rainfall in cities around the South Bay varies significantly due to the influence of local topography, most notably the coastal mountains on the western side of the Bay, and the warmer air on the eastern shores coming from the inland East Bay valleys.

Water Quality

In the Basin Plan, as further discussed below in Section 3.9.2.1, the San Francisco Bay Regional Water Quality Control Board identifies a number of beneficial uses of the Bay that must be protected (RWQCB 2017). The beneficial uses include cold freshwater habitat, warm freshwater habitat, fish migration, contact and non-contact recreation, wildlife habitat, preservation of rare and endangered species, fish spawning, and fish migration (RWQCB 2017).

The Basin Plan contains narrative criteria that provide general guidance to avoid adverse water quality impacts for constituents including salinity, sediment (i.e., total suspended solids), tastes and odors, sulfides, toxicity, and bioaccumulation. Numeric criteria included in the Basin Plan include such parameters as trace metals, dissolved oxygen, turbidity, temperature, pH, bacteriological pathogens, and un-ionized ammonia. These criteria apply to the receiving waters of the Bay.

The Basin Plan also sets beneficial uses for groundwater. Beneficial uses of San Francisco Bay area groundwater include municipal and domestic supply, agricultural supply, and industrial service supply. The Basin Plan establishes numeric and narrative surface and groundwater water quality objectives designed to protect designated beneficial uses of surface water and groundwater resources.

Turbidity. As discussed earlier, turbidity can be high in the South Bay during periods of high stream inflow when large quantities of suspended sediments are carried into the Bay, and due to the typical afternoon winds. Measured total suspended solids concentrations in the South Bay range from relatively low values (less than 50 mg/L) to very turbid conditions exceeding 1,000 mg/L (CDFW et al. 2019).

Sediment standards for San Francisco Bay as set in the Basin Plan establish that "the suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses." Furthermore, the turbidity standards establish that "water shall be free of changes in turbidity that could cause nuisance or adversely affect beneficial uses. Increases in turbidity as a result of discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU [nephelometric turbidity units]."

Salinity. Salinity in the South Bay varies seasonally, largely driven by variability in freshwater inflows from the Central Bay (i.e., the Delta), freshwater tributary inflows from the South Bay watersheds, winter precipitation, and summer evaporation. High freshwater inflows typically occur in winter and early spring in wet years when freshwater flows from the Delta make their way into the South Bay. During dry years when Delta outflows are small, surface salinity in the South Bay remains high (greater than 20 ppt). When Delta and tributary inflows decrease during late spring, summer and early fall, salinity increases to near oceanic salinities approximately 30 ppt on average. Exceptions include areas within the far South Bay below the Dumbarton Bridge, which can remain brackish year-round due to wastewater treatment plant discharges (CDFW et al. 2019).

The Basin Plan provides definitions for freshwater, saltwater, and estuarine waters, as follows: freshwater has a salinity of less than 5 ppt more than 75 percent of the time; saltwater has a salinity of more than 5 ppt more than 75 percent of the time; and estuarine water has a salinity that is between that of fresh water and saltwater. South Bay waters are classified as saltwater.

3.9.1.2 Project Setting

The salt ponds are entirely enclosed systems which take in water from the Bay and process the brine through a series of sequential evaporators that eventually reach a concentration near the point where sodium chloride precipitates. Details on salt production are provided in Section 2. Normal South Bay water salinity typically ranges between 10 to 30 ppt whereas the brines at the point of precipitation reach approximately 350 ppt.

The salt ponds are isolated from groundwater by Bay Mud clays that underlie the ponds and crystallizers, and also form the salt pond berms. Some of the pond bottoms also have layers of salt and gypsum (calcium sulfate). The Cargill Solar Salt System operations do not use groundwater, and do not affect groundwater recharge.

Operation of the solar salt system does not require discharge of brines or other liquids to the Bay, except during extreme storm events when excess rainwater may be discharged into the Alameda Flood Control Channel in Alameda Creek and into Mowry Slough. No substantial changes to the solar salt system operation are anticipated during the term of the proposed Project, and consequently there would be no major changes in discharges from the ponds. Because the salt ponds and crystallizers themselves are not considered to be receiving waters, water quality standards for the Bay do not apply to these industrial facilities. However, maintenance activities such as outboard berm maintenance and excavation for lock access may have a temporary effect on Bay water quality, particularly turbidity.

The salt pond berms will remain in their current configuration and size. Unlike publicly maintained flood control levees, berms associated with Cargill's facilities were built to facilitate salt production through solar evaporation. They were not constructed for flood protection of the surrounding communities and therefore do not meet modern flood control engineering requirements, and they will remain as such.

3.9.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Local goals, policies, and/or regulations applicable to this issue area are summarized below.

3.9.2.1 RWQCB Basin Plan

The Project area is within the jurisdiction of the RWQCB. The RWQCB is responsible for developing the water quality standards that are adopted in the Basin Plan. The Basin Plan is the master policy document that describes the legal, technical, and programmatic bases of water-quality regulation in the San Francisco Bay region. The plan includes a statement of beneficial water uses that the RWQCB will protect, water-quality objectives to protect designated beneficial water uses, and implementation plans for achieving water-quality objectives through its regulatory programs (RWQCB 2017). The Basin Plan makes reference to salt marsh ecosystems, specifically within the context of wetland restoration using dredged material. However, there is no direct reference to the South Bay's former salt ponds, particularly with regard to land-use plans or decisions. The Basin Plan provides both narrative and numeric water quality objectives to avoid adverse water-quality impacts.

The Alameda County Water District is responsible for groundwater resources in the eastern portion of the Project area. The agency carries out its missions by operating groundwater recharge facilities, conducting monitoring at guard wells, ensuring that unused wells are properly abandoned, and encouraging water conservation by municipalities in their respective service areas. Although there are public and private water agencies in San Mateo County, there is no groundwater management agency for the San Mateo Plain Subbasin (including the Redwood City Plant area).

3.9.2.2 San Francisco Bay Plan

The Bay Plan Major Conclusion and Policy 8 (BCDC 2020) states that "Because of the regulatory authority of the State Water Resources Control Board, the San Francisco Bay Regional Water Quality Control Board, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers, the Bay Plan does not deal extensively with the problems and means of pollution control. Nevertheless, the entire Bay Plan is founded on the belief that water quality in San Francisco Bay can and will be maintained at levels sufficiently high to protect the beneficial uses of the Bay." Bay Plan policies pertaining to water quality include, but are not limited to:

Water Quality Policy 1: Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses.

Water Quality Policy 2: Water quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Water Quality Control Board should be the basis for carrying out the Commission's water quality responsibilities.

Water Quality Policy 3: New projects should be sited, designed, constructed and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate best management practices, accepted and effective especially where water dispersion is poor and near shellfish beds and other significant biotic resources.

The Bay Plan includes additional water quality policies for new development, which are not relevant to the continuing operations and maintenance of the proposed Project.

Applicable Bay Plan policies for the surface area and volume of the Bay are:

Water Surface Area and Volume Policy 1: The surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action. Filling and diking that reduce surface area and water volume should therefore be allowed only for purposes providing substantial public benefits and only if there is no reasonable alternative.

Water Surface Area and Volume Policy 2: Water circulation in the Bay should be maintained, and improved as much as possible. Any proposed fills, dikes, or piers should be thoroughly evaluated to determine their effects upon water circulation and then modified as necessary to improve circulation or at least to minimize any harmful effects.

***Shoreline Protection Policy 1*:** New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if: (a) the project is necessary to provide flood or erosion protection for (i) existing development, use or infrastructure, or (ii) proposed development, use or infrastructure that is consistent with other Bay Plan policies; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the causes and conditions of erosion and flooding at the site; (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; (e) the protection is integrated with current or planned adjacent shoreline protection measures; and (f) adverse impacts to adjacent or nearby areas, such as increased flooding or accelerated erosion, are avoided or minimized. If such impacts cannot be avoided or minimized, measures to compensate should be required. Professionals knowledgeable of the

Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design.

***Shoreline Protection Policy 3*:** Riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revetment should be placed according to accepted engineering practice, and be free of extraneous material, such as debris and reinforcing steel. Generally, only engineered quarrystone or concrete pieces that have either been specially cast, are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability will meet these requirements.

***Shoreline Protection Policy 4*:** Authorized protective projects should be regularly maintained according to a long-term maintenance program to assure that the shoreline will be protected from tidal erosion and flooding and that the effects of the shoreline protection project on natural resources during the life of the project will be the minimum necessary.

***Shoreline Protection Policy 5*:** All shoreline protection projects should evaluate the use of natural and nature-based features such as marsh vegetation, levees with transitional ecotone habitat, mudflats, beaches, and oyster reefs, and should incorporate these features to the greatest extent practicable. Ecosystem benefits, including habitat and water quality improvement, should be considered in determining the amount of fill necessary for the project purpose. Suitability and sustainability of proposed shoreline protection and restoration strategies at the project site should be determined using the best available science on shoreline adaptation and restoration. Airports may be exempt from incorporating natural and nature-based features that could endanger public safety by attracting potentially hazardous wildlife.

***Shoreline Protection Policy 6*:** Adverse impacts to natural resources and public access from new shoreline protection should be avoided. When feasible, shoreline protection projects should include components to retain safe and convenient water access, for activities such as fishing, swimming, and boating, especially in communities lacking such access. Where significant impacts cannot be avoided, mitigation or alternative public access should be provided. Shoreline protection projects that include natural and nature-based features may be self-mitigating or require less mitigation than projects that do not include any natural or nature-based features.

***Shoreline Protection Policy 7*:** The Commission should encourage pilot and demonstration projects to research and demonstrate the benefits of incorporating natural and nature-based techniques in San Francisco Bay.

3.9.2.3 County-Level Flood Control and Stormwater Management

The responsibility for protection of stormwater quality is assigned to the countywide stormwater programs. The Alameda Countywide Clean Water Program represents 15 municipal government co-permittees, the Alameda County Flood Control and Water Conservation District (ACFC), and the Zone 7 Water Agency. This stormwater program implements stormwater quality management plans with regulatory oversight from the RWQCB.

The San Mateo County Flood Control District Act of 1959 establishes the San Mateo County Flood Control District (SMCFCD) in order to:

- Control and conserve stormwater and flood waters;
- Prevent waste or exportation of water;
- Retain drainage, storm, flood and other waters for beneficial use in the district; and
- Prevent pollution or diminution of water supply.

The SMCFCD is a special district created by the state legislature and has jurisdiction throughout all of San Mateo County.

The ACFC and the City of Fremont share the responsibility for storm drainage. The ACFC was formed in 1949 to respond to the rapid development taking place in potentially flood-prone areas. The ACFC's primary focus is to plan, design and inspect construction of flood control projects. Additionally, the ACFC maintains flood control infrastructure and preserves the natural environment through pollution control regulations.

The ACFC has delineated watersheds into management zones. In the Fremont area, two management zones exist: Zone 5 generally located in the northern part of the City, and Zone 6 in the south. Each zone contains several watersheds. The boundary between the two zones generally runs northeast to southwest along Stevenson Avenue and Grimmer Boulevard. The Project area is located within Zone 5. Zone 5, one of ACFC's largest zones, incorporates over 36 miles of natural waterways including Alameda Creek, Crandall Creek, Dry Creek, and Plummer Slough. It also includes 50 miles of engineered flood control channels (City of Fremont 2011).

3.9.2.4 City of Fremont

In the City of Fremont's General Plan Conservation Element and Public Facilities Element, the following policies are applicable:

- Policy 7-2.1: Preservation of Water Resources Water.
- Policy 7-3.1: Protect and Improve Water Quality.

3.9.2.5 City of Hayward

The City of Hayward's General Plan has the following goal applicable to the Project:

- Goal NR-6: Improve overall water quality by protecting surface and groundwater sources, restoring creeks and rivers to their natural state, and conserving water resources.

3.9.2.6 City of Menlo Park

Menlo Park's General Plan Open Space, Conservation, Noise and Safety Elements contain the following goal and policies applicable to the proposed Project:

- Goal OSC5 — ENSURE HEALTHY AIR QUALITY AND WATER QUALITY. Enhance and preserve air quality in accord with State and regional standards, and encourage the coordination of total water quality management including both supply and wastewater treatment

3.9.2.7 City of Newark

The City of Newark's General Plan contains the following policies that may be applicable to the proposed Project:

- Policy CS-3.4 Reducing Water Pollution.
- Policy EH-3.2 Maintaining Drainage Patterns.

3.9.2.8 City of Redwood City

In the Redwood City General Plan Natural Resource Element and Public Safety Element, the following policies may apply:

- Policy NR5.1: Restore, maintain, and enhance Redwood City's creeks, streams, and sloughs to preserve and protect riparian and wetland plants, wildlife and associated habitats, and where feasible, incorporate public access.
- Policy NR-5.2: Limit construction activities to protect water quality in creeks and streams.
- Policy PS-7.8: Address flooding potential as a result of sea level rise.

3.9.3 Impact Analysis

Potential impacts associated with hydrology and water quality would be considered significant if implementation of the proposed Project would do any of the following:

- Cause adverse effects on surface water quality
- Create changes in drainage patterns leading to substantial erosion or siltation
- Adversely affect the implementation of a Water Quality Control Plan, or
- Release unacceptable levels of pollutants as a result of Project inundation

The impact analysis below considers potential Project impacts relative to these four criteria.

3.9.3.1 Impact HYD-1: Effects on Surface Water Quality

Less than Significant Impact. Because the salt pond system is self-contained, the applicable standards would only apply to discharges from the ponds or the facilities. Cargill does not have any discharges to the Bay from the salt ponds or crystallizers, other than controlled discharge of stormwater during extreme storm events, in accordance with the current BMPs and approved permits and in coordination with RWQCB authorization. Implementation of the proposed Project will not result in changes to these controlled discharges.

The proposed Project could result in short-term impacts on water quality by increasing suspension of fine sediments during excavation for access to the locks for berm maintenance, and during sediment removal and infrastructure replacement or maintenance on the outboard side of the ponds, which can cause temporary localized increases in turbidity. All of these activities are part of the existing operation and maintenance procedures. However, as noted in Section 2.10.8, Cargill anticipates an increase in the frequency of lock access from approximately one event per year to up to four events per year for the projected permit period and plans to remove up to 1,000 CY of sediment per year, from approximately 80 CY per year, from in front of intakes. These are both changes in the level of activities relative to the baseline.

Cargill would continue to implement BMPs as described in Section 2.13 including berm maintenance and riprap replacement to control sediment discharge to the Bay. WRA (2016) determined that implementation of BMPs included in Section 2 had resulted in a measurable decrease in sediments placed within the Bay. Sediment removal from in front of the intakes would be accomplished by hydraulic suction or mechanical equipment. Given the limited volumes of sediments that would be removed at each location, short duration of the activity, the shallow and off-channel nature of the intakes and highly localized nature of the activity, that excess sediments would be expected to settle to the bottom relatively quickly, and the naturally turbid conditions in the South Bay, any potential impacts to surface water quality associated with sediment removal would be less than significant. Furthermore, by maintaining the ponds, Cargill maintains a larger area of surface water in the Bay, which has all of the benefits noted above. Therefore, sediment disturbance and the potential impact to surface water quality from the proposed Project are considered to be less than significant.

3.9.3.2 Impact HYD-2: Changes in Drainage Patterns Leading to Substantial Erosion or Siltation

Less than significant Impact. The Project does not involve altering the drainage patterns of any existing streams or rivers, nor does it add any impervious surfaces. Therefore, there would be no permanent increase in erosion or siltation on- or off-site. Cargill may periodically remove silt from in front of some intake structures (i.e., on the outboard side); this activity would merely restore the historical capacity of the specific channel or slough in question in the vicinity of the intake. This activity would not result in substantial erosion or siltation. Depth to sediment in the vicinity of the intakes is shallow and the removal of additional sediments would alter the depth of water in the immediate vicinity. However, this is not expected to alter drainage patterns or the courses of the sloughs and creeks in the vicinity of the intakes given their off-channel nature and the limited volume and localized footprint of the sediment removal. It is similarly not expected to result in substantial erosion of siltation within the vicinity of the intake structures. A detailed description of the procedure for sediment removal is provided in the Project Description (Section 2). This impact would be less than significant.

3.9.3.3 Impact HYD-3: Effect on Implementation of Water Quality Control Plan

Less than significant Impact. Activities on the outboard side of exterior berms or intake structures, including the removal of up to 1,000 CY of sediment per year, may result in temporary, localized increases in turbidity through the disturbance and thus release of some sediment. Similar to the discussion in Impact HYD-1 and HYD-2, the volume of sediment proposed for removal and the anticipated activity footprint are minimal and located in off-channel locations, the activity would be of short duration, and the South Bay in the vicinity of the proposed project is naturally turbid. The BMPs described in Section 2.13 would reduce the potential impacts of sediment disturbances to less than significant levels.

3.9.3.4 Impact HYD-4: Release of Pollutants Due to Project Inundation

Less than Significant Impact. The potential for inundation due to a tsunami along the South Bay shoreline is very low. The salt ponds are isolated from the Bay and from local streams and flood control channels. Cargill operations and ongoing maintenance of berms and infrastructure mitigates the risk of inundation due to berm failure. However, there is a longer-term inundation risk from SLR. As part of the proposed Project, Cargill would implement preliminary SLR adaptation efforts, which are intended to reduce or eliminate the likelihood of inundation of the salt ponds during the term of the proposed Project. This impact is less than significant.

3.9.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.10 NOISE

3.10.1 Environmental Setting

The Project Area is located between the San Francisco Bay and commercial, industrial, and residential developments of Newark, Fremont, Redwood City, and Menlo Park. The nearest residences are located in the City of Newark, approximately 450 feet from Newark Plant 1 Pond P1-PP1, 60 feet from Newark Plant 2's Pond FMC-2, and 900 feet from Pond B-3C. Several mobile home communities are located nearly adjacent to the Redwood City Plant, between the southern edge of the Redwood City Plant and US-101. The closest sensitive receptors to the Cargill West Bay areas are approximately 900 feet away on the west side of US-101.

With one exception, all public schools in the vicinity are located more than half a mile from any Project area berms or ponds. Summit Preparatory Charter High School is located approximately 0.25 mile south of the Redwood City Plant, south of US-101. The next closest school is Newark Memorial High School located about 0.43 mile northeast of Pond CX-22. Delaine Eastin Elementary School in Union City is located approximately 0.55 mile east of Pond B-3C.

Significant sources of noise in the vicinity of the Project area include the Dumbarton Bridge/SR 84, which passes through Newark Plant 1; the Union Pacific Railroad, which passes between Newark Plants 1 and 2, and US-101, which passes between 600 and 1,500 feet south of the Redwood City Plant. Interstate 880, which passes more than 1.5 miles to the east of the Project area, is unlikely to be a significant source of noise to the Project area. The Oakland, San Jose, and San Francisco Airports are all more than 5 miles from the Project area. The closest municipal airports are in Hayward, Palo Alto, and San Carlos, 2 or more miles away.

Potentially affected communities are protected from dangerous or nuisance levels of noise by each city's Municipal Codes. Each city has noise ordinances that regulate decibel levels produced from industrial areas that may affect neighboring communities. Noise in industrial zones is regulated in Chapter 8-21904 of the Fremont Municipal Code, Section 4-1.03.1 of the Hayward Municipal Code, Section 8.06.030 of the Menlo Park Municipal Code, Chapter 17.24.100 of the Newark Municipal Code, and by Chapter 24 of the Redwood City Municipal Code. Current BMPs by Cargill also serve to protect wildlife from noise impacts as required on USFWS property by Section 7 of the FESA.

Current and proposed Project activities involve equipment that typically produces noise at no more than 88 A-weighted decibels (dBA) at a 50-foot distance (trucks, bulldozers, excavators, etc.) (FHWA 2019). Noise levels from maintenance equipment would remain similar to previous equipment, with modern equipment typically being less noisy than older equipment (FHWA 2019). Cargill occasionally uses a vibratory driver to drive replacement piles for water control structures and pumps. In addition, Cargill periodically uses vinyl sheet pile on the outboard sides of locks to contain sediment and accelerate its settlement. As part of the proposed Project Cargill may conduct a study for sea level rise adaptation that would include driving vinyl sheet pile on the inboard side of some outboard berms. Vinyl sheet piles are also driven using a vibratory driver. Because soils in the Project area are typically soft, low-impact energy drivers should be adequate for most pile installation.

The analysis of potential noise and vibration effects in this section focuses on humans and the built environment. Effects of vibration on wildlife are addressed in Section 3.4, Biological Resources.

3.10.1.1 Ambient Noise and Vibration Environment

The ambient noise environment is defined primarily by vehicle traffic on the Dumbarton Bridge/SR 84, which passes through Plant 1; the Union Pacific Railroad, which passes between Newark Plants 1 and 2; and US-101, which passes south of the Redwood City Plant. US-101 freeway noise is so loud that mobile homes and RVs 650 feet to the north of the freeway adjacent the Redwood City Plant berms are exposed to ambient day-night sound level (L_{dn}) noise levels greater than 70 dBA.[9]

Local vehicle traffic and typical neighborhood noise sources contribute to the ambient noise environment to a lesser extent. The only potentially significant noise-producing commercial or industrial activity in the vicinity of the Project area is the Port of Redwood City, located immediately east of the Redwood City Plant. Other industrial and commercial activities are in proximity to the Dumbarton Bridge/SR 84, I-880, and US-101, which would tend to mask noise generated by these sources.

Heavy equipment would be in use during the maintenance activities. The equipment that could be used, and noise levels that could be generated by the equipment, are shown in Table 3.10-1. Because several pieces of equipment may be running simultaneously, total noise levels were calculated assuming the three noisiest pieces of equipment are operating simultaneously near each other. Noise is measured on a logarithmic scale; total noise levels are therefore heavily influenced by the loudest noise source, and the addition of other (quieter) sources has only a small effect on the total noise level.

Noise levels drop approximately 6 dB with every doubling of distance (shielding from topography, wind and other factors may affect this estimate).

Existing ground-borne vibration in the vicinity of the Project area is caused by the passing trains, trucks on local roads and highways, construction activities, and to a much lesser degree, trucks on berms.

9 *See:* Redwood City General Plan, p. PS-75, Figure PS-11: 2010 Existing Noise Contours

Table 3.10-1. Maximum Estimated Noise Levels of Proposed Project Equipment

Project Equipment	Noise Levels at 50 feet (dBA Lmax)
Amphibious Excavators (Land-based excavator used as surrogate)	85
Backhoe	80
Back-up Alarms	85
Barge (Tugboat used as surrogate)	87
Bulldozer	85
Compaction Roller	74
Compactor	82
Crane	85
Drill Rig	84
Dump truck	84
Excavator, barge mounted (Land-based excavator used as surrogate)	85
Forklift	79
Front-end loader	80
Grader	85
Haul truck (20-30 ton capacity)	84
Pickup Truck	55
Pile Driver, vibratory driver	95
Pump (w/ diver assisted suction hose)	76
Scraper	85
Sweeper	80
Tractor (without attachments)	84
Water truck for dust control	80

Note:
L_{max} = Maximum sound level; the highest sound level measured during a single noise event.
Sources: FHWA 2019, EAI 2006 (Tugboat), FTA 2006, USEPA 1971

3.10.1.2 Sensitive Receptors

In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptors in the vicinity of the Project area include the mobile home parks south of the Redwood City Plant and the residential areas near Pond B-3C and Newark Plant 1 and Newark Plant 2. While Summit Preparatory Charter High School is located within approximately 0.25 mile of the Redwood City Plant, noise from activities at the Redwood City Plant would be masked by US-101, located between the plant and the school. Sensitive receptors that could potentially be affected by the Project are summarized in Table 3.10-2.

Noise and vibration impacts to wildlife are evaluated in Section 3.4, Biological Resources.

Table 3.10-2. Sensitive Receptors

Location	Sensitive Receptor to Closest Project Location	Distance from Project Site (feet)	Direction from Project Site
Residential Receptors	(Newark Plant 2) -- Homes in FMC Parcel C to Green Hornet #2 Pump	450	East
	(Newark Plant 2) -- Homes on Bayside Way near Pond CX-7	250	Northwest
	(Newark Plant 2) -- Homes at Bridgeway development near Ponds FMC-1 to -3	60	Northeast
	(Newark Plant 2) -- Homes at Bridgeway development to pile driving test site	5,000	North
	(Redwood City Plant) -- Harbor Village Mobile Home Park near Pond RC-8W	140	South
	(Redwood City Plant) -- Trailer Villa RV Park near Pond RC-7C	75	South
	(Redwood City Plant) -- Anton Menlo Apartments to Pond RC-8W	140	South
	(Baumberg Pond B-3C) -- Homes on Monterey Drive to Pond B-3D	950	Northeast
	(Cargill West Bay) -- Pipeline maintenance to Hamilton Motel	900	South
Parks	(Newark Plant 1) - Coyote Hills Regional Park's Bayview Trail to Pond P1-7	240	North
	(Newark Plant 1) -- Alameda Creek Regional Trail to Pond P1-2A	25	South
	(Newark Plant 1) -- Newark Slough Trail to Pond P1-PP1 near Tidelands Trailhead	20	Northeast
	(Newark Plant 2) --Bayshores Park to Pond FMC-3	1,400	Northeast
	(Newark Plant 2) -- Softball field in Silliman Rec. Complex to Pond CX-22	300	Northeast
	Redwood City Plant) -- Bedwell Bayside Park to Pond RC-7C	200	East
	(Cargill West Bay) – San Francisco Bay Trail to Brine Pipeline	85	South
Schools	(Redwood City Plant) -- Summit Preparatory Charter High School	0.25 miles	Northeast
	(Newark Plant 2) -- Newark Memorial High School	0.43 miles	Northeast
	(Newark Plant 1) -- Delaine Eastin Elementary School, Union City	0.55 miles	East
Religious Centers	(Newark Plant 2) -- Pentecostal Missionary Church to Pond CX-1	1,400	North

3.10.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. The U.S. Noise Control Act implemented by USEPA and the U.S. Department of Housing and Urban Development regarding acceptable noise level guidance set the primary federal requirements. The Bay Plan (BCDC 2020) does not provide any applicable findings or policies with regard to noise. Local goals, policies, and/or regulations applicable to this issue area are summarized below.

3.10.2.1 Noise

Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans identify general principles intended to guide and influence noise generating activities.

County of Alameda

The Alameda General Plan Countywide Noise Element indicates that acceptable noise levels range from 55 to 65 dBA L_{dn}[10] for residential and educational uses to 70 dBA L_{dn} for commercial and to 75 dBA L_{dn} for industrial and open-space recreation and parks uses.

Relevant countywide noise policies include the following goal:

- Goal #1: The peace, health, safety, and welfare of the residents of Alameda County require protection from excessive, unnecessary, and unreasonable noises from any and all sources in the cities and unincorporated territory.

Chapter 6.60, Noise, of the Alameda County Code of Ordinances prohibits unnecessary, excessive, and annoying noise to ensure public health, welfare, and safety (Alameda County 1966). This chapter provides maximum exterior noise limits for specific land uses during specified time periods. Permissible noise levels range from 45 to 65 dBA for residential and public area uses and from 60 to 80 dBA for commercial properties during the night (10 p.m. to 7 a.m.). Permissible noise levels range from 50 to 70 dBA for residential and public area uses and from 65 to 85 dBA for commercial properties anytime during the day (7 a.m. to 10 p.m.).

County of San Mateo

The San Mateo General Plan states that satisfactory noise levels range from 50 to 65 dBA L_{dn} for residential and transient-lodging uses to 70 dBA L_{dn} for semipublic facilities (churches, hospitals, nursing homes, schools, libraries, civic buildings, halls, and theaters) and office buildings to 75 dBA L_{dn} for industrial, open-space and recreation, and outdoor sports uses. Chapter 4.88, Noise, of the San Mateo County Code of Ordinances prohibits unnecessary, excessive, and annoying noise to ensure public health, welfare, and safety (San Mateo County 1982).

City of Fremont

The following policy within the City of Fremont's General Plan Safety Element (City of Fremont 2011) is relevant to the Project:

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10 The L_{dn} is the day-night 24-hour average sound level. A penalty of 10 decibels is added to nighttime noise levels between 10:00 p.m. and 7:00 a.m. before averaging to reflect the greater noise sensitivity during nighttime hours.

- Policy 10-8.2: Acceptable Noise Environment: Guidelines articulated by Table 10-4[11] are not intended to be applied reciprocally. In other words, if an area currently is below the desired noise standards, an increase in noise up to the maximum should not necessarily be allowed. The impact of a proposed project on an existing land use should be evaluated in terms of potential for adverse community response based on a substantial increase in existing noise levels, regardless of the compatibility guidelines.
- Policy 10-8.3 requires existing residential neighborhoods be protected from noise when:
  1. The project would cause the L_{dn} to increase by 5 dBA or more but would remain below 60 dBA, or
  2. The project would cause the L_{dn} to increase by 3 dBA or more and exceed 60 dBA, or if it has the potential to generate significant adverse community response due to the unusual character of the noise.

Noise is regulated in Fremont through enforcement of Municipal Code performance standards and implementation of General Plan policies. Article 19, Section 8-21904 of the Fremont Municipal Code contains noise performance standards for the land uses within the City, at the property line nearest the source of a suspected violation. The maximum noise generated by such use cannot exceed 60 dBA when adjacent uses are residential, park or institutional uses. Less stringent standards apply to adjacent commercial or industrial uses (65 or 70 dBA, respectively). Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices (City of Fremont 2016).

City of Hayward

The Hayward General Plan 2040 defines the "Normally Acceptable" noise level based on the Project's land use type (Industrial Manufacturing, Utilities, Agriculture) as 75 dBA (L_{dn} or Community Noise Equivalent Level [CNEL]). The Hayward Municipal Code, Sections 4-1.03.1(a & b), sets a maximum noise level of 70 dBA at residential properties between 7:00 a.m. and 9:00 p.m. However, Section 4-1.03.4 allows construction noise levels up to 86 dBA during certain daytime hours. These other standards may also apply:

- Residential uses (low-density single family, duplex, mobile homes): 60 dBA (L_{dn} or CNEL)
- Residential uses (townhomes and multi-family apartments and condominiums), Lodging (Motels and Hotels): 65 dBA (L_{dn} or CNEL)
- Playgrounds, Neighborhood Parks, Office Buildings (Business, Commercial, and Professional): 70 dBA (L_{dn} or CNEL);
- Haz 8.22 - The City shall require a vibration impact assessment for proposed projects in which heavy-duty construction equipment would be used (e.g., pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall

11 Note: this table reference is to a table in the City of Fremont General Plan.

require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

- Section 4.1.03 of the Municipal Code prohibits construction noise levels more than 6 dB above the local ambient level at any point outside the property plane before 7 a.m. and after 7 p.m. daily except on Sundays and holidays. On Sundays and holidays the restrictions apply to before 10 a.m. and after 6 p.m. (City of Hayward 2011).

City of Menlo Park

According to the City of Menlo Park General Plan (City of Menlo Park 2016) normally acceptable external noise levels for public parks, recreation, and passive open space range from 50 to 75 L_{dn} or CNEL. Levels above 70 L_{dn} are either normally unacceptable or clearly unacceptable. Acceptable noise levels for commercial, intensive open space, and industrial uses are 70 to 75 dBA L_{dn}. Section 8.06.030 of the Menlo Park Municipal Code defines the noise limitations within city boundaries. For all sources of sound measured from any residential property, the night- and day-time noise limitations are 50 dBA and 60 dBA, respectively (City of Menlo Park 2004).

City of Newark

The City of Newark's General Plan describes exterior residential noise levels of less than 60 dBA Ldn to be normally acceptable, and between 60 to 70 dBA Ldn to be conditionally acceptable. POLICY EH-7.4 limits noise levels in outdoor residential living areas to 60 dBA Ldn or requires noise-reduction measures.

The City of Newark's Noise Ordinance, section 17.24.100(A)(3)(b) allows construction noise levels of a maximum of 86 dBA on weekdays between 7:00 a.m. and 7:00 p.m.

City of Redwood City

The City of Redwood City's Noise Ordinance sections 24.30 to 24.32 allow noise levels from construction equipment that do not exceed 110 dB within a residential district of the City between 7:00 a.m. and 8:00 p.m. on weekdays.

The following goals and policies of the General Plan (City of Redwood City 2011) are relevant to the Project:

- Goal PS-13: Minimize the impact of point source noise and ambient noise levels throughout the community.
- Policy PS-13.4: In accordance with the Municipal Code and noise standards contained in the General Plan, strive to provide a noise environment that is at an acceptable noise level near schools, hospitals, and other noise sensitive areas.
- Policy PS-13.5: Limit the hours of operation at all noise generation sources that are adjacent to noise sensitive areas, wherever practical.
- Policy PS-63: Enforcing Construction and Maintenance Noise Regulations: Limit construction to the hours of 8:00 a.m. to 5:00 p.m. on weekdays, and 9:00 a.m. to 5:00 p.m. on Saturdays, with no noise-generating construction on Sundays or holidays. Limit construction workers' radio noise so they are not audible at residences bordering the project site. Equip engines with good mufflers. Locate stationary noise-generating equipment as far as possible

from nearby sensitive receptors. Prohibit unnecessary idling of internal combustion engines. Notify residents adjacent to the project site of the construction schedule in writing.

City of Union City

The City of Union City's General Plan provides a maximum allowable noise exposure for single-family residences of 60 dBA L_{dn} or CNEL. A project's maximum noise level increase cannot exceed 10 dBA above the local ambient noise level at residential properties. Construction equipment noise is exempt from those standards between 9:00 a.m. and 8:00 p.m. on weekdays but it must not produce noise levels then of more than 83 dBA at a distance of 25 feet, or 86 dBA anywhere on neighboring property.

3.10.2.2 Vibration

Typical levels of ground-borne vibration at a 50-foot setback for blasting, pile driving, and vibratory compaction equipment are 100 vibration decibels (VdB), and 95 VdB for heavy tracked vehicles (such as bulldozers, cranes, and drill rigs). There are no local standards for vibration impacts. However, the DOT's Federal Transit Administration (FTA) has developed assessment criteria for evaluating vibration impacts associated with transit projects. The criteria are appropriate for assessing human annoyance or interference with vibration-sensitive equipment for common projects. The FTA has proposed criteria based on maximum overall levels for a single event. There are criteria for frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day), and infrequent events (less than 30 vibration events of the same source per day). The criteria for homes and buildings where people normally sleep (e.g., nearby residences) are 72 VdB for frequent events, 75 VdB for occasional events, and 80 VdB for infrequent events (FTA 2018; Table 3.10-3). Impact will occur if these levels are exceeded. Caltrans' recommended standard with respect to the prevention of structural building damage is 0.2 inch/second peak particle velocity (PPV) for normal structures.

Table 3.10-3. Groundborne Vibration Impact Criteria

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 µinch/sec, RMS)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Note:
µinch/sec = microinches per second; RMS = root mean square; VdB = vibration decibels
Source: *FTA 2018*

The following local policies, goals and actions address vibration impacts. The Cities of Menlo Park, Newark, and Redwood City do not have any applicable policies pertaining to vibration.

City of Fremont

The City of Fremont utilizes the FTA criteria to evaluate vibration impacts throughout the City.

City of Hayward

GOAL HAZ-8 - Minimize human exposure to excessive noise and ground vibration.

HAZ-8.22 Vibration Impact Assessment - The City shall require a vibration impact assessment for proposed projects in which heavy duty construction equipment would be used (e.g. pile driving, bulldozing) within 200 feet of an existing structure or sensitive receptor. If applicable, the City shall require all feasible mitigation measures to be implemented to ensure that no damage or disturbance to structures or sensitive receptors would occur.

3.10.3 Impact Analysis

Potential impacts associated with noise and vibration would be considered significant if implementation of the proposed Project would do any of the following:

- Result in a substantial temporary or permanent increase in ambient noise levels at sensitive receptors compared to their existing ambient noise levels under current conditions, by exceeding the criteria below and leading to resulting noise level exceeding the applicable exterior standard at a noise sensitive use:
  - An increase of the existing ambient noise levels by 5 dB or more, where the ambient level is less than 60 dBA L_{dn}
  - An increase of the existing ambient noise level by 3 dB or more, where the ambient level is 60 to 65 dBA L_{dn}, or
  - An increase of the existing ambient noise level by 1.5 dB or more, where the ambient level is greater than 65 dBA L_{dn}.
- Exceed the FTA's or Caltrans' vibration standards of:
  - 80 VdB with respect to human annoyance for residential uses, or
  - 0.2 in/sec PPV for prevention of building damage to normal structures.

If the ambient noise environment is quiet and the new noise source substantially increases the noise exposure, an impact may occur even though a noise criterion level might not be exceeded.

The City of Fremont is the only applicable local agency with incremental noise level standards to protect against a project's increases in noise levels compared with ambient noise levels. Fremont's standards are triggered when a project would cause the L_{dn} to increase by 5 dBA or more but would remain below 60 dBA, or would cause the L_{dn} to increase by 3 dBA or more and exceed 60 dBA.

Fremont's standards are similar to those used by the Federal Interagency Committee on Noise (FICON). The FICON provides guidance in evaluations of changes in ambient noise levels. It defines a significant noise impact will occur with an increase of 5 dB when ambient noise levels without the project are less than 60 dB; or with an increase of 3 dB when ambient noise levels without the project are between 60 to 65 dB, or an increase of 1.5 dB when ambient noise levels without the project are greater than 65 dB. The reason for these criteria is that as ambient noise levels increase, a smaller increase in noise levels resulting from a project is sufficient to cause annoyance. In lower noise level circumstances below 60 dBA L_{dn}, a greater increase in noise levels was reported to be tolerated before people become annoyed. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, they have been widely accepted in many California cities and counties. They are used in the preparation of the noise sections of Environmental Impact Reports that have been certified and are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}.

3.10.3.1 Impact NV-1: Substantial Temporary or Permanent Increase in Ambient Noise Levels

Less than Significant Impact. Within the Project area, there would be no significant increase in noise from using heavy equipment to conduct maintenance activities as compared to baseline conditions. However, the number of days during which maintenance activities may occur may increase slightly due to Cargill's proposed SLR adaptation work and the removal of sediment from in front of intakes, as well as an increase in the extent of berms made drivable. These increases would be partially offset by an expected decrease in the mileage of berm core compaction. The noise analysis evaluated each of the new activities and estimated the potential increase in noise from the changes at the closest sensitive receptor locations, taking into consideration background noise levels at the receptor locations.

Installation of vinyl sheet piles could result in a localized increase in noise; however, this increase would not be significant at the nearest sensitive receptors. Potential increases in the duration of maintenance activities would most likely occur farther away from residences, as most berms along the land-side perimeter of the Project area are already drivable, and no other new maintenance activities are anticipated within 1,000 feet of sensitive receptors. Because the same types of equipment would be used as for current maintenance activities, Project noise levels for most maintenance activities would be similar to current levels. Noise levels for noise impact analysis are typically measured and averaged during an hour or a day, but not for periods of multiple days or weeks. The standards used by all relevant local agencies are based on averaged, short-term periods of minutes, hourly or daily noise levels. Therefore, to a sensitive receptor, this Project's maintenance activities would not be louder than current levels on any given day. A slight increase in the number of days that such activities occur would not raise the average hourly or average daily noise levels. Accordingly this Project's average noise levels from similar activities during a slightly increased number of days would not be significant.

Noise levels from maintenance activities at or near the Project site would fluctuate depending upon the particular type, number, and duration of use of various pieces of construction equipment. Table 3.10-1 shows typical exterior noise levels generated by various types of construction equipment proposed for use in these maintenance activities. Table F-1 in Appendix F shows predicted maintenance noise levels at the nearest sensitive receptors from Project activities at Cargill's various ponds, based on consideration of the operation of three of the loudest equipment types during their simultaneous operations at full power with a

50 percent “acoustical usage factor.” The assumption of operation at full power is likely to overstate the actual noise generation, as most equipment rarely functions at full power, and it is unlikely that three pieces of equipment would do so simultaneously. The "acoustical usage factor" is used to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a maintenance operation on the Project sites (FHWA 2018). An acoustical usage factor of 50 percent is selected for calculations in Table 3.10-1 to be conservative. The Federal Highway Administration standards for such usage factors are based upon tests and assume that this Project’s types of heavy equipment will mostly have a usage factor of 40 percent or less, representing a typically quieter use.

In addition to Cargill’s ongoing maintenance activities and the potential sheet study, it proposes the following new activities for maintaining its facilities: limited high-priority berm raising for SLR adaptation, removal of sediment from in front of intakes, increasing the number of repair events for infrastructure such as pumps and platforms, and increasing the average annual number of lock entries from 1 to 4. As discussed below, since operations and maintenance work involving the same equipment already occurs at the Project site, only noise level increases relative to current operations need be analyzed against relevant thresholds of significance. The magnitude of these Project noise level increases would be less-than-significant.

The nearest sensitive receptors to the study location for vinyl sheet pile installation on the exterior berm of Pond P2-12 are about 5,000 feet to the northeast in the westernmost portion of the FMC Parcel C residential subdivision, near Pond FMC-1. At that long distance of nearly a mile, such new activities would hardly be audible, with noise levels of 50.7 dBA equivalent continuous sound level (L_{eq}) at 5,000 feet away (refer to Table F-1 in Appendix F). The increase in total noise from the receptors’ existing noise levels of between about 57 to 60 dBA L_{eq}, with the noise from sheet pile installations, would increase to about 57.9 to 60.5 dBA L_{eq}, an increase of only about 0.5 dBA to 0.7 dBA above existing ambient noise levels. An increase of less than 1 dBA is not generally audible to people in such residential settings. That small amount of an increase in noise level in comparison to ambient conditions is less than the threshold of significance even for sensitive receptors exposed to more than 65 dBA L_{dn} of exterior noise levels.

As shown in Table F-1, the Project’s noise levels during the new SLR adaptation work at the primary berms and with vinyl sheet pile installation would not exceed local noise standards at sensitive receptors. These new maintenance activities are far away so their noise levels would be decreased substantially by distance. Their noise levels would be less than 59 dBA L_{eq} at the nearest sensitive receptors. Existing mobile homes and RVs adjacent to the Redwood City Plant are already exposed to US-101 freeway noise levels greater than 70 dBA L_{dn}. At these homes, that existing highway noise would mask such distant Project noise occurring with these new maintenance activities.

This Project would increase the number of times per year that lock access activities occur from approximately one per year to 4 times per year. Lock access would occur at a distance of about 8,400 feet from sensitive receptors in the Newark Plant 1 area’s vicinity, about 7,000 feet from homes in the Newark Plant 2 area’s vicinity, and about 5,200 feet from sensitive receptors in the Redwood City Plant’s vicinity. These maintenance activities will occur on more days per year, not more times per day. Therefore the increase in lock access will not generate noise levels increases in comparison to existing ambient noise levels at sensitive receptors during any one day. This increase in the number of days per year that locks are accessed would result in less than significant noise impacts on any one day.

The Project proposes removing sediment from the intake structures, which may result in a slight increase in truck trips in the vicinity of Newark Plants 1 and 2, and the Redwood City Plant. Cargill predicts that dump trucks operating to remove this sediment would only operate on five days a year. At most, that hauling could result in approximately 120 truck trips per year, or on average about 24 trips per day during sediment removal activities. Cargill may also import an additional 9,600 CY/year of clean material for SLR adaptation. This could generate up to an additional 24 round-trip truck trips per day during the approximately 1 month period for this maintenance activity.

The slight increase in trucking could increase noise levels along various haul routes. These haul routes will be along heavily-trafficked roads so the increase in noise levels would not create a significant increase in noise along those routes. In addition, Cargill recently completed the Plummer Slough Bridge project which is designed to reroute heavy vehicular and equipment movement associated with salt pond production from an existing dirt roadway adjacent to a new residential development and proposed public trail, to an existing internal roadway via the construction and use of a new, clear-span bridge over Plummer Slough.

The increase in truck traffic due to the new maintenance activities would represent only a small percentage of total traffic volume along area roadways. The addition of Project traffic would increase noise levels by 1.5 dBA L_{dn} or less. A traffic noise level increase of less than 1.5 dBA L_{dn} is not considered to result in a significant noise impact. Therefore the noise impacts of these truck traffic increases will be less-than-significant.

Removal of sediment at intakes would also comply with the applicable local noise standards. The closest intake to new homes in the FMC Parcel C residential subdivision in the City of Newark will be about 450 feet south of the Green Hornet #2 pump intake structure in the Newark Plant 1 at Pond P1-PP1. At that distance to nearby homes, this maintenance work would generate a noise level (Table F-1) of approximately 66.0 dBA L_{eq}. If that work continued from 8 a.m. to 5 p.m., its day-night average noise level would be about 62.2 dBA L_{dn} and would be consistent with the City of Newark's General Plan standard for conditionally-acceptable noise levels at residences of 60 to 70 dBA L_{dn}. The City of Newark also allows construction noise levels up to 86 dBA during weekday daytime construction hours. None of this Project's calculated maintenance activities noise levels at nearby sensitive receptors there would exceed 86 dBA L_{eq} (Table F-1). Therefore the noise impact of such maintenance activities at this intake structure would be less than significant. The noise levels from sediment removal activities at most other Project intake structures would be less intrusive because they are farther from sensitive receptors.

At the Redwood City Plant the nearest sensitive receptors from the Redwood City Brine Pump intake structure at Pond RC-7A are the residents in mobile homes and RVs located as close as 140 feet from the pump. If sediment removal work occurs there at that intake structure, the noise level at these sensitive receptors would be about 76.2 dBA L_{eq}. If that work only occurs full time between 8:00 a.m. and 5:00 p.m., its noise level can be converted to a day-night average of 72.4 dBA L_{dn} which is appropriate for comparison to the local noise standards for such temporary and infrequent work (sediment removal would occur on average every 3 to 5 years). Also, certain current activities, such as berm maintenance, would result in temporarily higher levels of noise at the closest residential receptors but not higher than currently occurs due to permitted activities such as berm maintenance. Berm maintenance is permitted now as close as 75 feet from these mobile homes, resulting in a noise level of about 82.9 dBA L_{eq} at these homes during the infrequent times that berm maintenance would occur. The potential noise levels associated with sediment removal would be lower than those associated with currently-occurring berm maintenance activities.

This Project proposes similar work and would therefore not increase existing maintenance noise levels by more than 1.5 dB; therefore, the proposed Project's maintenance work noise levels during sediment removal would be less-than-significant.

Recreational users on nearby trails could get close to heavy equipment while it is operating, and could therefore experience high noise levels on a short-term basis. Assuming local trail users choose to walk past operating heavy equipment rather than avoid areas with active maintenance, they could be exposed to noise levels in excess of 65 dBA for a distance of up to 1,600 feet (800 feet in either direction from the operating equipment). At an average walking speed of 3 mph, trail users would be exposed to high levels of noise for up to 6 minutes. Given the short duration of the potential exposure and the opportunity to use other berms for recreation, the potential impact to recreational users of the berms or nearby trails is less than significant.

Project maintenance activity noise would not significantly impact the other nearby recreational facilities. Such noise impacts on people using the Bedwell Bayfront Park, the San Francisco Bay Trail, the Bayview Trail in Coyote Hills Regional Park, the Don Edwards San Francisco Bay National Wildlife Refuge, the Alameda Creek Regional Trail, the Newark Slough Trail, or the Bayshores Park would be less than significant because recreational users would be transiting through or near the Project areas only briefly to access other portions of the recreational areas that would be further away from Project maintenance operations. Therefore, because the proposed Project would be in compliance with applicable thresholds, this noise impact to recreational users would be less than significant.

3.10.3.2 Impact NV-2: Ground-borne Vibration and Noise

Less than Significant Impact. Construction or maintenance activities can generate ground-borne vibration that causes annoyance to humans and in extreme cases cause physical damage to nearby buildings. Vibration levels depend upon the specific equipment used and which maintenance activities are involved. Ground-borne vibration is typically associated with the use of pile drivers or heavy construction equipment. Vibration generated by construction equipment spreads through the ground and diminishes in amplitude with increasing distances. Table 3.10-4 shows the nearest sensitive receptors to Project activities that would generate vibration impacts. Table 3.10-5 shows the vibration levels generated by typical construction equipment.

The Project would require limited maintenance activities that can generate vibration perceivable at a distance. These maintenance activities are not near enough to sensitive receptors to exceed the FTA's or Caltrans' vibration standards. Moreover, because these maintenance activities would occur during daytime, non-vibration-sensitive hours only, and because such activities would occur intermittently within the planning period, vibration effects during this Project's operations would be less than significant. These vibration levels would not be great enough to cause structural damage in nearby buildings or to cause significant human annoyance impacts at the nearest sensitive receptors.

Table 3.10-4 provides the distances from this Project's pond complexes where vibration-generating maintenance activities will occur to the nearest sensitive receptors.

Table 3.10-4. Distances from Nearest Sensitive Receptors to Vibration Producing Activities

Pond Complex	Approximate Distance From the Nearest Construction (Earthmoving) Activities (feet)[1]	Approximate Distance From the Nearest Pile-Driving Activities feet) [2]
Baumberg Pond B-3C - to Monterey Drive Homes	950	N/A
Newark Plant 1: Homes in FMC Parcel C to Green Hornet Pump #2	450	N/A
Newark Plant 1: Newark Memorial High School to Pond CX-22	2,300	N/A
Newark Plant 2: Bayside Way homes by Pond CX-7	250	6,100
Newark Plant 2: Bridgeway homes by Pond FMC-2	60	5,000
Redwood City: Trailer Villa RV Park to Pond RC-8W	75	3,500
Redwood City: Harbor Village Mobile Home Park	140	3,500
Redwood City: Anton Menlo Apartments to Pond RC-7C	140	3,500
Redwood City: Summit Preparatory Charter High School	1,400	N/A
Cargill West Bay – pipeline to Hamilton Hotel	900	N/A

Notes:

[1] The distances are measured from the edge of the pond closest to the sensitive receptors (residential uses) to the sensitive receptors. Earthmoving activities may occur anywhere within the pond complexes.

[2] The distances are measured from the location where piledriving would occur (typically at vinyl sheet pile study site or water control facilities) to the nearest sensitive receptors.

Table 3.10-5. Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity at 25 ft. (in/sec)	Approximate Lv at 25 ft. (VdB) [1]
Pile Driver (Sonic) upper range		0.734	105
Pile Driver (Sonic) typical		0.170	93
Vibratory Roller		0.210	94
Large bulldozer		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: FTA 2006, WSDOT 2010 (pile driver)
Notes:
[1] Lv is the velocity level in decibels (VdB) referenced to 1 μ inch/second and based on the root mean square (RMS) velocity amplitude.

As shown in Table 3.10-6, the highest vibration associated with this Project's construction equipment would be generated by the vibratory pile driver. Vibration from such a pile driver could exceed both the FTA and Caltrans standards at a distance of 25 feet but there are no sensitive receptors within that distance. The use of trucks, bulldozers and directional drilling could also exceed FTA standards at 25 feet with respect to human annoyance for residential uses, and there are also no sensitive receptors within 25 feet of locations where this equipment would be used.

Vibratory pile driving would typically occur far from residences and the soft site soils would be expected to dampen vibrations. Ground-borne vibration impacts to Category 2 (i.e., residential) locations are generally considered to be less than significant if the vibration source is more than 200 feet from the vibration source. The mobile homes and RVs south of the Redwood City Plant are the only residences within 200 feet of that portion of the Project area. No pile driving is being proposed for the berms immediately north of these residences; any pile driving would be over 3,500 feet away. Other new residences are being built as close as about 60 feet to berms at Newark Plant 2 Ponds FMC-1, -2, and -3 but no pile driving is proposed within about 5,000 feet of those new homes.

All of the predicted vibration levels from this Project's heavy equipment use or its vibratory pile driver use would be less than the FTA's maximum-acceptable threshold of significance for ground-borne vibration of 80 VdB with respect to human annoyance for residential uses. All of the predicted vibration levels from this Project's activities would also be less than the Caltrans' recommended standard with respect to the prevention of structural building damage of 0.2 in/sec PPV for normal structures. All of the very nearest homes have been recently built and are not historic or fragile buildings that could experience structural damage from this Project's maintenance activities. Therefore the vibration effects during this Project's operations would be less than significant.

Table 3.10-6. Predicted Vibration Levels at Closest Sensitive Receptors from Maintenance Activities

Project Maintenance Sites (Closest Pond) [1]	Equipment Used [2]	Distance (feet)	PPV [3] (in./sec.)	Approximate L_V (VdB) [4]
Baumberg Pond (Pond B-3C)	Bulldozer Vibratory Pile Driver	950 6,500	0.0004 0.00035	39.6 20.6
Newark Plant 1 (Pond P1-4B)	Bulldozer Vibratory Pile Driver	450 450	0.001 0.002	49.3 55.3
Newark Plant 2 (Pond FMC-2)	Bulldozer Vibratory Pile Driver	60 5,000	0.024 0.00006	75.6 24.0
Redwood City (Pond RC-8W)	Bulldozer Vibratory Pile Driver	75 3,500	0.020 0.0001	72.7 28.6
Cargill West Bay (Pipeline)	Bulldozer or excavator	1000	0.0004	38.9

Notes:
[1] Pond that is closest to a sensitive receptor which is typically a residence.
[2] Assumed peak particle velocity (PPV) (bulldozer) = 0.089 in./sec. at 25 feet; PPV (vibratory pile driver) = 0.170 in./sec. at 25’ for typical sonic pile drivers. Equipment with the maximum vibration levels is shown for those locations.
[3] PPV at 25 feet is based on FTA 2006. To calculate PPV at other distances, the following equation (FTA 2006) was used: PPV at distance D = PPV (at 25 ft) * [(25/D)^1.5]
[4] Vibration levels generated by pile driver and/or other construction equipment as designated in the second column– $L_v(D) = L_v$(25 fee–) - 30 x Log(D/25) where D = Distance from source to sensitive receptor

3.10.4 Mitigation Summary

The Project would not result in any potentially significant impacts from noise or vibration; therefore, no mitigation is required.

3.11 TRANSPORTATION

3.11.1 Environmental Setting

As described in the Project Description (Section 2), the Project area is located on both sides of the Bay, on the east side near Newark and on the west side near Redwood City. Both Project areas are in industrial zones, with commercial and residential areas nearby. The eastern Project area (Newark Plants 1 and 2) is approximately one mile from downtown Newark, and the western Project area, the Redwood City Plant, is approximately one mile from downtown Redwood City. Interstate 880 is a feeder highway to the Newark area but does not pass through or adjacent to the Project area. State Route 84 and the Dumbarton Bridge are the only major highways passing through the Newark Plants 1 and 2; other public roads only pass along the boundary. Central Avenue is the main surface street to the Cargill main salt refining facility and Newark Plants 1 and 2. The Redwood City Plant is served by US-101 and surface street Seaport Boulevard. The Cargill West Bay areas are accessible via frontage roads and portions of the drivable berms.

The proposed Project would continue to use existing transportation systems. No new roadways would be created to implement the proposed Project activities. Newark Plants 1 and 2 would be accessed by Central Avenue, and the Redwood City Plant would be accessed via Seaport Boulevard. This is consistent with current traffic patterns under existing Cargill maintenance operations. Traffic on the local connecting roadways and freeway system would result from moving Project equipment and materials into and out of the Project area. For example, construction workers and equipment would use the Vista Point interchange on eastbound SR 84 in Menlo Park. Activities that may involve the movement of soil or other materials include adjusting berm height for SLR, making berms drivable, repairs to berms, berm core compaction, and intake structure maintenance (sediment removal). These and other activities, such as maintenance of structures, may also require heavy equipment to travel to the Project area.

Cargill will continue its current practice of using existing stockpile materials and accepting clean material (soil and riprap) from local sources for berm maintenance, limiting the distance and number of truck trips. Clean materials imported for berm and salt pond maintenance activities may be imported at any time of year, because maintenance activities may occur any time of the year. In addition, sediment removal for each intake structure would typically be required every three to five years at a given structure, but some work could occur at various structures in any given year.

The Project area does not include any mass transit. The Project area does include USFWS trails and a section of the Bay Trail.

In September 2020 Cargill completed the Plummer Slough Bridge project. As a result of that project, most of the heavy vehicular and equipment movement associated with salt production has been rerouted from an existing dirt roadway adjacent to a new residential development and proposed public trail, to an existing internal roadway.

3.11.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1. Caltrans has authority over the state highway system, including mainline facilities and interchanges. Caltrans is responsible for the planning, design, and construction of highway improvements, as well as for operations and maintenance. Regional and local agencies have jurisdiction over the transportation network and circulation in and around the Project area. The Metropolitan Transportation Commission is the regional transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. In addition, the Bay Plan contains policies that may be applicable to this resource area.

Pursuant to Senate Bill 743 (Steinberg 2013), the focus in evaluating transportation impacts under CEQA has shifted from traffic delays (Level of Service [LOS]) to total vehicle miles traveled (VMT) (OPR 2018). The intent of SB 743 is to bring analysis of transportation impacts under CEQA more into alignment with the State's overall goals to increase long-term sustainability by encouraging infill development, increasing reliance on mass transit, and reducing GHG emissions. SB 743 does not preclude local jurisdictions from setting LOS targets; however, a project's conformance with LOS standards is addressed as part of its conformance with plans and policies. The VMT analysis is intended to focus on automobile and light-duty truck trips; heavy duty truck trips can be included in the analysis for convenience (OPR 2018). Impacts associated with heavy duty vehicles are addressed in the noise, air quality, and greenhouse gas analyses of this EA.

The requirements from SB 743 are implemented in CEQA Guidelines §15064.3 Subdivision (b). To connect the analysis part of those guidelines, the Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) describes a series of "screening thresholds" to identify when a project should be expected to cause less-than-significant impact without conducting a detailed study. As discussed in the document, the screening threshold for small projects is "Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact."

The Alameda County Transportation Commission (ACTC) is responsible for the county-wide transportation planning in that county. This includes highway and roadway improvements and the operation of public transit systems, shuttles, and carpool, bicycling and pedestrian programs. In addition, this agency is responsible for long range regional transportation planning in coordination with the MTC. The ACTC prepares and updates the Countywide Transportation Plan, the long-range planning and policy document that guides future transportation decisions for all modes and users in Alameda County.

The City/County Association of Governments (C/CAG) is the Congestion Management Agency for San Mateo County authorized to set state and federal funding priorities for improvements affecting the San Mateo County Congestion Management Program (CMP) roadway system. The C/CAG is required to prepare and adopt a CMP on a biennial basis. The purpose of the CMP is to identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions. The CMP is required to be consistent with the MTC planning process that includes regional goals, policies, and projects for the Regional Transportation Improvement Program (C/CAG 2019). C/CAG-designated CMP roadway system components in Redwood City and Menlo Park include SR 82 (El Camino Real), SR 84 (Woodside Road), US-101, and I-280. C/CAG-designated CMP intersections in or near Redwood City include El Camino Real/Whipple Avenue, Bayfront Expressway/Marsh Road (borders Redwood City), and Woodside Road/Middlefield Road.

C/CAG has adopted guidelines as a part of its CMP, which are intended to reduce the regional traffic impacts of substantive new developments. The guidelines apply to all projects in San Mateo County that will generate 100 or more net new peak-hour trips on the CMP network and are subject to CEQA review.

3.11.2.1 San Francisco Bay Plan

The Bay Plan (BCDC 2020) Transportation Finding i may be relevant to the transportation analysis in this EA:

- A continuous network of paths and trails linking shoreline communities and crossing the Bay’s bridges is a vital component in a regional transportation system and provides travel alternatives to the automobile.

In addition, the following Bay Plan policies pertain to the transportation analysis:

Recreation Policy 3a. Recreational facilities, such as waterfront parks, trails, marinas, live-aboard boats, non-motorized small boat access, fishing piers, launching lanes, and beaches, should be encouraged and allowed by the Commission, provided they are located, improved and managed consistent with the following standards:

General Recreational facilities should:

1. Be well distributed around the shores of the Bay to the extent consistent with the more specific criteria below. Any concentrations of facilities should be as close to major population centers as is feasible;
2. Not pre-empt land or water area needed for other priority uses, but efforts should be made to integrate recreation into such facilities to the extent that they are compatible;
3. Be feasible from an engineering viewpoint; and
4. Be consistent with the public access policies that address wildlife compatibility and disturbance.

In addition:

5. Different types of compatible public and commercial recreation facilities should be clustered to the extent feasible to permit joint use of ancillary facilities and provide a greater range of choices for users.

6. Sites, features or facilities within designated waterfront parks that provide optimal conditions for specific water-oriented recreational uses should be preserved and, where appropriate, enhanced for those uses, consistent with natural and cultural resource preservation.
7. Access to marinas, launch ramps, beaches, fishing piers, and other recreational facilities should be clearly posted with signs and easily available from parking reserved for the public or from public streets or trails.
8. To reduce the human health risk posed by consumption of contaminated fish, projects that create or improve fishing access to the Bay at water-oriented recreational facilities, such as fishing piers, beaches, and marinas, should include signage that informs the public of consumption advisories for the species of Bay fish that have been identified as having potentially unsafe levels of contaminants.
9. Complete segments of the Bay and Ridge Trails where appropriate, consistent with policy 4-a-6.

Public Access Policy 10. Access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available. Diverse and interesting public access experiences should be provided which would encourage users to remain in the designated access areas to avoid or minimize potential adverse effects on wildlife and their habitat.

3.11.2.2 City Goals and Policies

The cities of Hayward, Fremont, Newark, Redwood City, and Menlo Park have jurisdiction over their respective city streets, bike paths, public trails, and parking facilities in the Project area. These cities have adopted general plans that include strategies and policies regarding operation and maintenance of their respective transportation networks.

The following provides a general summary of applicable goals and policies from each of the cities' adopted general plan:

- Protect residential neighborhoods from intrusion of truck traffic by maintaining and enforcing an efficient system of designated truck routes (City of Fremont, City of Hayward, and City of Newark).
- Support measures that encourage through truck traffic to use interstate highways rather than local truck routes (City of Fremont and City of Hayward).
- Balance the safe and efficient movement of goods with local access and circulation needs (City of Hayward and City of Redwood City).
- Reduce vehicle miles traveled and dependency on motor vehicles through land use and transportation strategies (City of Hayward and City of Newark).
- Promote and coordinate the planning of pedestrian and bicycle trail systems with affected jurisdictions and organizations (City of Fremont, City of Newark and City of Redwood City).

- Maintain the minimum level of service (LOS) at signalized intersections during the peak commute periods (City of Fremont, City of Hayward, City of Menlo Park and City of Newark).

3.11.3 Impact Analysis

Potential impacts associated with transportation would be considered significant if implementation of the proposed Project would do any of the following:

- Conflict with a program, plan, ordinance or policy addressing the circulation system
- Be inconsistent with CEQA Guidelines Section 15064.3 Subdivision (b), or
- Adversely affect emergency access

Potential transportation-related impacts are evaluated relative to these significance criteria.

3.11.3.1 Impact TT-1: Conflict with a Program, Plan, Ordinance or Policy Addressing the Circulation System

Less than Significant Impact. The Project may result in an increase in vehicle trips in the vicinity of Newark Plants 1 and 2, and the Redwood City Plant. The slight increase in vehicle trips would be associated with materials imported into and out of the site resulting from SLR adaptation efforts (raising high priority berms), increased berm maintenance, increased lock access and egress, and removal of sediments from intake structures. A decrease in operation for berm core compaction is proposed resulting in decrease of vehicle trips for this activity. Operation for other activities such as making berms drivable, general maintenance and repair of outboard and inboard berm erosion are anticipated to remain the same as previous years and therefore, are not anticipated to result in an increase of vehicle trips. Passenger car trips for all activities, if any, would be minimal, and would be limited to contractor employees, should Cargill increase the amount of maintenance work contracted out.

Current operations use approximately 10,700 CY of imported material per year, which occurs during the construction season. Some material for stockpiles is delivered to Newark Plant 2 and a smaller portion to the Redwood City Plant. This material is delivered either directly to a designated stockpile located within the Project area by the contractor providing the material, or to a maintenance location, if appropriate. With the assumption that a truck carries an average of 12 CY of materials per trip, current operations for deliveries require approximately 11 to 12 trucks a day from outside of the Project area to a stockpile over the course of four months, working 5 days per week. With the proposed operations it is anticipated that raising the berms due to SLR would require an increase of approximately 9,600 CY of imported material per year (occurring over a period of one month during a year), an increase of about 1,000 CY/year for off-haul of sediment, a minor (approximately 100 CY/year) increase for lock access, and a reduction of about 1,000 CY per year for berm core compaction (occurring over a period of four months during a year). The net increase in materials results in an additional approximately 50 trucks a day assuming that material deliveries for raising the berms would occur over a 4-month period. As stated above, some of these truck trips would be to Newark Plant 2, and some to the Redwood City Plant.

In previous years and current operations, an average of 33 miles of berms were maintained and graded (miles of berms range from 19.8 to 37.2 between years 2014 to 2019 as shown in Table 2-4). For the proposed continuing operations, an estimated annual average of 38.5 miles per year of berms (averaged over 10 years) would be maintained. Based on the Project changes in maintenance activities discussed in Section 3.11.1, truck trips associated with the increase in berm maintenance due to additional materials would be limited since Cargill would reuse soils on-site to the degree feasible and by accepting soil and riprap from other local projects. New maintenance activities for the proposed Project would not be expected to have a significant impact based on the TT-1 criterion.

The Project may temporarily increase lock access and egress events for salt pond maintenance. The locks provide access to the salt ponds when berms in the vicinity of the salt pond are not drivable. The increase in events is anticipated to occur in the beginning of the Project and is expected to decline over time as more of the berms are made drivable and more work on the berms can be accomplished from the tops of the berm. An average of approximately 4 locks per year could be accessed over the 10-year permit period. If an increase in heavy equipment would be required due to the increase of lock access and egress events, it would be temporary and minimal.

Temporary short-term closures of the USFWS trails and the Bay Trail may occur due to the proposed Project. During berm maintenance, access to the berms may be needed through these trails and may require brief closures. A Traffic Management Plan (TMP) would also be prepared if access to a work location involves routine heavy equipment access or numerous truck trips via a berm that receives frequent public use.

During construction, there would not be any conflicts with a Congestion Management Plan, Countywide Transportation Plan, Bay Plan, and the various Cities' General Plans within the Project limits, because the increase in traffic is nominal and temporary. Truck trips are generally not expected to use public streets and highways during the peak hours. The types of trucks delivering materials typically travel during off-peak hours. Changes in traffic volumes are minimal relative to background traffic, and there are no conflicts with relevant programs, plans, ordinances, or policies from affected jurisdictions.

In addition, Cargill has recently completed the Plummer Slough Bridge project which has rerouted heavy vehicular and equipment movement associated with salt production from an existing dirt roadway adjacent to a new residential development and proposed public trail to an existing internal roadway. This minimizes potential effects to the new housing development located immediately north of Central Avenue between Willow Street and Hickory Street. Preparation of a TMP (Section 2.12.5) would further reduce any potential impact. The TMP would provide strategies for managing truck traffic, especially during peak hours, and identify established truck routes. The TMP would also coordinate and address the closures on the public trails, if needed. Cargill will also implement BMPs to provide notification regarding planned work on berms. Based on the evaluation of transportation effects of the proposed Project, Impact TT-1 is a less than significant impact.

3.11.3.2 Impact TT-2: Consistency with CEQA Guidelines Section 15064.3 Subdivision (b)

Less than Significant Impact. The proposed Project may result in up to a total of 50 additional trucks per day due to material needs for berm raising for seal level rise adaptation, increased lock use, and sediment removal from the intake structures. This traffic forecast is worst-case since it is unlikely that material delivery would occur at the same time as the sediment removal, and the estimate aggregates trips to Newark Plant 2 and the Redwood City Plant.

This traffic estimate is based on a worst-case assumption that all sediment from the intakes would be exported to landfills. Cargill's maintenance practices would continue to minimize the increase in VMT by reusing soils on-site when possible. This practice would reduce the need for materials that would be imported from further away and reduce the amount of sediments removed from the site, which will overall result in reducing the truck trips and truck travel distances. Therefore, the VMT increase would be reduced due to Cargill's proposed changes to operating strategies.

Based on the Technical Advisory on Evaluating Transportation Impacts in CEQA, since the Project does not generate more than 110 trips per day, the Project is considered a small project and is assumed to cause a less than significant transportation impact. The proposed Project would not conflict with or be inconsistent with CEQA Guidelines section 15064.3.

3.11.3.3 Impact TT-3: Emergency Access

Less than Significant Impact. The Project's effect on Central Avenue and Seaport Boulevard and other local roads is a nominal increase in truck traffic. No adverse effects on emergency access are anticipated. The TMP would ensure that adequate emergency access is provided during any maintenance activities along roads. Therefore, the impact for TT-3 is less than significant.

3.11.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.12 TRIBAL CULTURAL RESOURCES

This section analyzes the potential for the Project to have an adverse impact on tribal cultural resources.

3.12.1 Environmental Setting

Section 3.5.1 describes the environmental setting for tribal cultural resources.

3.12.2 Regulatory Setting

Federal and state regulations pertaining to Tribal Cultural Resources are described in Table D-1. As discussed in Section 3.5.2.1, the Bay Plan (BCDC 2020) Environmental Justice and Social Equity Finding c acknowledges that tribal issues have not been expressly accounted for in the Bay Plan, so for purposes of this EA BCDC's analysis of tribal issues is informed by CEQA requirements. Section 3.5.2 provides a discussion of local polices and regulations pertaining to cultural resources.

AB 52, approved in 2014, established a new category of resources under CEQA called "tribal cultural resources." According to section 21074 of the Public Resource Code:

> "(a) "Tribal cultural resources" are either of the following: (1) Sites, features, places cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: (A) Included or determined to be eligible for inclusion in the California Register of Historic Resources, or (B) Included in a local register of historic resources as defined in subjection (k) of Section 5020.1; or (2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
>
> (b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
>
> (c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a)."

PRC Section 21084.2 states that a "project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant impact on the environment." To assist in determining whether a project may have an impact on a tribal cultural resource, a CEQA lead agency is required to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. No Native American tribes have requested consultation from BCDC regarding projects in its jurisdiction.

3.12.3 Consultation Results

Native American tribes traditionally and culturally affiliated with the Project area have not requested consultation pursuant to PRC Section 21080.3.1. BCDC initiated tribal consultation in June 2020 by requesting a list of tribal representatives from the Native American Heritage Commission, as well as a search of NAHC's Sacred Lands file. On July 20, 2020, BCDC sent letters to the tribal representatives provided by NAHC. The letters notified the tribal representatives of the proposed Project and invited them to provide comments regarding the Project, share any information regarding possible Native American cultural resources which could potentially exist on the Project site, and identify any other potential concerns related to the proposed Project.

BCDC followed up with phone calls to the tribal representatives in August 2020. At that time, the Amah Mutsun Tribal Band of Mission San Juan Bautista indicated that the Project site is outside of their area, and therefore they would have no comment on the Project. Phone calls were made again in December 2020 and representatives of three tribes were reached for comment. The Amah Mutsun Tribal Band[12] representative indicated at that time that the Project is outside of their area, and therefore they would have no comment on the Project. The representative of the Indian Canyon Mutsun Band of Costanoan commented verbally that she recommends that there be an archaeological monitor and a Native American monitor present during any earth moving activity. The representative of the Ohlone Indian Tribe commented verbally that he affirms and supports the mitigation measures listed in this document.

3.12.4 Impact Analysis

Potential impacts associated with tribal cultural resource would be considered significant if implementation of the proposed Project would:

- Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC Section 21074 that is:
  1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or
  2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the standard set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in PRC, Section 5021.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

Potential impacts related to tribal cultural resources are evaluated relative to these significance criteria.

[12] While their names are similar, The Amah Mutsun Tribal Band of Mission San Juan Bautista and the Amah Mutsun Tribal Band are separate tribes.

3.12.4.1 Impact TCR-1: Substantial Adverse Change in the Significance of a Tribal Cultural Resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources a resource determined to be by the lead agency to be significant

Less than Significant with Mitigation. As stated in Section 3.5, a records search of all pertinent survey and document data was conducted of the CHRIS, located at the Northwest Information Center, Sonoma State University, on November 21, 2019 and January 28, 2020. The records search indicated that no previously recorded archeological resources have been identified on the Project site; however, recorded Native American prehistoric sites have been recorded near the study area. The proposed Project would not result in a substantial adverse change in the significance of any tribal cultural resources. BCDC requested a record search of the NAHC's Sacred Lands File, which resulted in a notification that the result of the check of the file was positive, but no further information on this subject was received from the NAHC or the tribal representatives. Consultation with Native American tribes has been offered and initiated by BCDC to all tribal representatives identified by the NAHC. Section 3.12.3 provides additional information.

While no impacts to tribal cultural resources have been identified to date, mitigation measures have been included in Section 3.5, Cultural Resources, that would serve to protect cultural resources in the event any are inadvertently encountered during the various maintenance activities of the Project. With implementation of mitigation measure MM CUL-1 and CUL-2, described in Section 3.5, this impact would be less than significant.

3.12.5 Mitigation Summary

Implementation of the following mitigation measures would reduce potential Project-related impacts to tribal cultural resources to less than significant.

- MM CUL-1: Inadvertent Encounter of Undiscovered Archaeological Resources
- MM CUL-2: Inadvertent Encounter of Human Remains

3.13 UTILITIES AND SERVICE SYSTEMS

3.13.1 Environmental Setting

There is no potable water or wastewater service within the Project area, and maintenance activities in the Project area would not affect any water or wastewater pipelines. Stormwater is contained within the Project area; during extreme storm events, some rainwater may be discharged via low salinity ponds, as described in Section 2.12.4. Electrical power in the Project area is supplied by PG&E. Cargill is typically a net importer of clean soil and concrete material.

3.13.2 Regulatory Setting

There are no federal or state regulations that are applicable to this resource area, nor are there any applicable Bay Plan policies. Summarized below are the local goals, policies, and/or regulations applicable to this issue area.

3.13.2.1 City of Fremont

The City of Fremont General Plan includes the following applicable goal and policy:

- Goal 9-6: Solid Waste Diversion - Waste diversion maximized with the long-term objective of eliminating landfill waste.
- Policy 9-6.1: Increase Waste Diversion - Divert more of the City's solid waste stream to beneficial reuse, with a long term objective of eliminating landfill waste.

3.13.2.2 City of Hayward

The City of Hayward General Plan contains the following goal and policy that may be applicable to the proposed Project:

- GOAL PFS-7 Minimize the generation of solid waste, increase recycling, and provide for the collection and disposal of solid waste.
- Policy PFS-7.12 Construction and Demolition Waste Recycling. The City shall require demolition, remodeling and major new development projects to salvage or recycle asphalt and concrete and all other nonhazardous construction and demolition materials to the maximum extent practicable.

3.13.2.3 City of Menlo Park

The City of Menlo Park General Plan's Open Space/Conservation, Noise and Safety Element contains the following policy that may be applicable:

- Policy OSC4.8 Waste Diversion. Develop and implement a zero waste policy, or implement standards, incentives, or other programs that would lead the community towards a zero waste goal.

3.13.2.4 City of Newark

The City of Newark General Plan does not contain any relevant policies.

3.13.2.5 City of Redwood City

The Redwood City General Plan's Built Environment element contains the following goals and policies that may apply to this resource area:

- GOAL BE-45: Minimize the volume of solid waste that enters regional landfills.
- Policy BE-45.1: Meet or exceed State mandates regarding the diversion of waste from landfills.
- Policy BE-45.2: Encourage recycling, composting, and source reduction by residential and non-residential sources in Redwood City.

3.13.3 Impact Analysis

Potential impacts associated with utilities and service systems would be considered significant if implementation of the proposed Project would generate excess solid waste such that the capacity of local landfills would be adversely affected, thereby accelerating the need for new or expanded landfills.

3.13.3.1 Impact UTIL-1: Excess Generation of Solid Waste

Less than Significant Impact. Cargill accepts clean soil and riprap (concrete rubble) material for use in berm maintenance, thus diverting solid waste from landfills. Some excavated soil or sediment may also be disposed of at area landfills because the material does not meet the geotechnical criteria for soil reuse. Other solid waste disposal would include small amounts of maintenance-related trash and recyclable material. There would be sufficient capacity at existing facilities, and the proposed Project would not accelerate the need for new or expanded landfills.

3.13.4 Mitigation Summary

The Project would not result in significant impacts; therefore, no mitigation is required.

3.14 ALTERNATIVES TO THE PROJECT

When undertaking an EA as the lead agency for CEQA purposes, BCDC regulations require that BCDC describe any feasible alternatives, including design alternatives, to the proposed project that would reduce any substantial adverse environmental impacts identified for the proposed project (14 CCR § 11521(e)). As stated in Section 1, the Project purpose is to continue maintenance and operational activities at Cargill's solar salt systems in Newark and Redwood City in a safe and environmentally protective manner over the next 10 years. The Project objectives include (1) continue conducting various activities necessary to maintain the integrity and stability of earthen berms, water control structures, and other infrastructure associated with salt-making to ensure continued viability of salt production activities, (2) allow for implementation of preliminary SLR adaptation efforts, including studies, and (3) permit Cargill to develop and implement new maintenance methods that may further reduce the effects of maintenance activities on the environment, improve efficiency, and/or adapt to changing climate conditions, where appropriate.

There are no feasible alternatives to the proposed Project that would reduce the potential impacts associated with the proposed Project. CEQA typically requires analysis of the No Project alternative. In this case, ceasing to conduct maintenance would mean that it would become harder and harder for Cargill to conduct salt-making operations because pumps and other essential equipment would begin to fail. It is also likely that, if no maintenance is conducted, within the term covered by the proposed Project one or more berms would breach and brine would be released to the Bay. Once one berm is breached, the increased water levels in the breached pond would put pressure on adjacent berms, and a cascade effect of breaching may ensue. Therefore, because the No Project alternative would not meet the Project objectives and may lead to substantial adverse environmental consequences, the No Project alternative is not considered feasible.

Another alternative to the proposed Project would be to conduct more limited maintenance activities by, for example, deferring any SLR adaptation activities. Conducting more limited maintenance activities would have the same result as the No Project alternative: Cargill facilities would continue to deteriorate and/or berms would breach given the reality that SLR will begin to impact the Project site regardless of whether SLR adaptation measures are undertaken as part of the proposed Project. While this outcome would likely occur later than under the No Project alternative, this alternative would not meet the objectives of allowing Cargill to continue to operate and to conduct preliminary SLR adaptation.

Consequently, there are no feasible alternatives to the Project that would reduce substantial adverse effects. Furthermore, the BMPs included as part of the proposed Project would reduce most potentially significant adverse effects to a less-than-significant level. The few impacts that are potentially significant can be mitigated to a less-than-significant level.

3.15 CUMULATIVE AND IRREVERSIBLE EFFECTS

3.15.1 Cumulative Effects

Cumulative impacts occur when the combined effects of past projects, the current projects identified in the Project vicinity, and probable future projects would result in a substantial adverse impact.

There are five projects that have been identified for purposes of the cumulative impacts analysis for the proposed Project: the Eden Landing Restoration Project occurring north of Newark Plant 1, the South Bay Salt Pond Restoration Project Alviso (south of Newark Plant 2) and Ravenswood (south of the Redwood City Plant) Restoration Project, the South San Francisco Bay Shoreline Project (south of Newark Plant 2), the proposed Sanctuary West housing development immediately south of the crystallizers at Newark Plant 2, and Cargill's proposed Mixed Sea Salt Enhanced Processing and Removal Project. The two restoration projects and the South San Francisco Shoreline Project are either in the permitting or construction stage. The proposed Sanctuary West housing development has been approved by the Newark City Council, but that approval has been challenged in court. Nonetheless, because the development has received approval, it is considered reasonably foreseeable for the purposes of the cumulative impact analysis. The MSS Project is in the development stage. The project would involve enhanced processing and removal of MSS from Ponds P2-12 and P2-13. Cargill's SLR assessment identified the second most significant mid-term risk of SLR as the susceptibility of the MSS ponds to berm overtopping and potential failure during a 100-year storm surge. This risk is projected to become significant only after mid-century (2050). The goal of the MSS Project, a collaboration with EBDA, is to ensure that the MSS will be fully processed and removed prior to mid-century. The project would deploy innovative technology to achieve enhanced recovery of commercial product from the MSS. Residual salts would then be blended into the EBDA wastewater conveyance system for ultimate discharge into the Bay, in full compliance with EBDA's NPDES permit.

A non-binding term sheet for this proposed project was signed by the EBDA in July 2020, and CEQA review is expected to begin in mid-2021. Cargill expects the MSS Project to proceed on an independent timeline. The MSS Project is separate from the Solar Salt System Maintenance and Operation Activities Project because the two projects are not dependent on each other, would be permitted separately, and are on different timelines.

All five projects would involve some the same types of activities as the proposed Project, specifically transporting, excavating and placing soils; in addition, the two restoration projects and South San Francisco Bay Shoreline Project may also affect Bay habitat, including mudflats and/or tidal marsh. The two restoration projects may also require pumping of Bay water as part of dredged sediment delivery operations during restoration. In addition, the MSS Project may use one of the intakes currently being used for intake of Bay water; this could increase the total volume of water taken in at this intake.

Potential cumulative impacts are discussed by resource area below.

3.15.1.1 Air Quality

As shown in Table 3.3-7 and Table 3.3-8, the cumulative cancer risk, HI, and $PM_{2.5}$ levels at the MESRs near the Newark and Redwood City sites are all be below all the BAAQMD cumulative significance thresholds. Project TAC risk/hazard/ $PM_{2.5}$ levels at any location in the zones of influence would be much less than those required to threaten adverse health impacts under the CEQA project-level significance thresholds. Thus, the Project's contribution to cumulative TAC impacts at any location in the zones of influence would be less than considerable, and since the cumulative thresholds are not exceeded, the overall cumulative TAC impacts would be less than significant.

3.15.1.2 Biological Resources

As discussed in Section 3.4, with implementation of the BMPs shown in Section 2.13, the proposed Project is anticipated to have less than significant impacts on biological resources. The nature of the proposed work remains the same as has been permitted under the existing Operations and Maintenance permit. Any changes from the baseline operations would be limited to a slight increase in berm maintenance, berm heightening, lock access/egress events, repairs and/or replacements of infrastructure, and the vinyl sheet pile study. Most maintenance activities would remain unchanged. The Project has also implemented BMPs to ensure that any impact on biological resources from current operations and maintenance activities is less than significant.

The MSS Project may require Bay water via one of the existing water intakes. This additional intake of water would be in addition to the intake of water associated with the proposed Project. With incorporation of the BMPs associated with intake of water and avoidance and minimization of impacts to special-status aquatic species, and given the limited size of the work areas relative to adjacent areas and the larger Bay ecosystem, the combined effects of past projects, the current projects identified in the Project vicinity, and probable future projects would not result in a significant adverse impact.

3.15.1.3 Cultural Resources

Cultural resources impacts due to the proposed Project are potentially significant, and less than significant with mitigation. The combination of past, present, and reasonably foreseeable future projects along the Bay shoreline and in the region could result in a significant loss of Native American and historical archeological resources, including Native American remains. This would be considered a significant cumulative impact in the area of cultural resources. No impacts to known cultural resources would occur as result of implementation of the proposed Project. Mitigation measures identified in Section 3.5 would reduce the impact of the proposed Project ton unknown archeological resources that may inadvertently be encountered to a less-than-significant level. The Proposed Project's implementation of mitigation measures would reduce the impacts of the project on cultural resources to a less-than-significant level, and thus would serve to address Project-related contribution to cumulative impacts on cultural resources. Therefore, the proposed Project would not have a cumulatively considerable impact on cultural resources because the incremental effects of the Project would not be considerable when viewed in connection with the effects of past, current and probable future projects. The cumulative impact of the proposed Project on cultural resources would be less than significant.

3.15.1.4 Geology and Soils

Potential impacts associated with this resource are specific to the Project area; therefore activities at the Project area would not contribute to a cumulative effect within the region. There would be no cumulative impact.

3.15.1.5 Greenhouse Gases

As discussed in Section 3.8, by their nature GHG emissions are assessed for their contribution to a cumulative effect on climate change. Project emissions would be far below the threshold of significance for a cumulatively significant level of GHG emissions (1,100 MT CO_2e). There would be no cumulative impact.

3.15.1.6 Hazards and Hazardous Materials

The proposed Project would use small quantities of hazardous materials as part of routine operations. The other projects would likely use similar types and quantities of materials. Use, management, transportation, and disposal of hazardous materials is heavily regulated to prevent impacts to human health and the environment. All projects can reasonably be assumed to be compliant with these requirements, as would the proposed Project. Consequently, there would be no cumulatively significant impact.

3.15.1.7 Hydrology and Water Quality

The MSS Project would address the potential mid-term risk of SLR such as the susceptibility of the MSS ponds to berm overtopping and potential failure during a 100-year storm surge. The MSS Project may require Bay water via one of the existing water intakes. This additional intake of water would be in addition to the intake of water associated with the proposed Project. While this could increase the total volume of water taken in at this intake, the overall water levels from the intakes would be generally consistent with the overall volume of water pumped a year. BMPs associated with intake of water would be implemented to minimize potential impacts to be equivalent to or less than those associated with the current operations and maintenance activities analyzed under this environmental document. As a result there would be no cumulative significant impact.

3.15.1.8 Noise

As discussed in Section 3.10, estimated incremental noise levels at ambient receptors consist of the combined existing noise levels at the receptor locations and the incremental noise levels associated with the proposed Project. Consequently, the impact analysis in Section 3.10 considered the cumulative noise levels at the receptor locations. The estimated incremental noise levels are less than significant, and there would be no cumulative impact. Vibration effects are highly localized. The proposed Projects would not result in a localized significant effect due to vibration, and therefore there would be no cumulative effect.

3.15.1.9 Transportation

As discussed in Section 3.11, the Project is anticipated to have less than significant impacts on the transportation system as the nature of the work remains the same as previously permitted. Furthermore, Cargill has recently completed the Plummer Slough Bridge project which has rerouted heavy vehicular and equipment movement associated with salt production to minimize any potential impacts to a new residential development and proposed public trail. Lastly, Cargill may require the implementation of a TMP, to efficiently plan the movement of vehicles to reduce any potential impacts that may occur from its operations. As a result there would be no cumulative significant impact.

3.15.1.10 Tribal Cultural Resources

While no impacts to tribal cultural resources have been identified, mitigation measures have been included in Section 3.5, Cultural Resources, that would serve to protect cultural resources in the event any are inadvertently encountered during the various maintenance activities of the Project. With implementation of mitigation measure MM CUL-1 and CUL-2, described in Section 3.5, potential contributions by the proposed Project to a significant cumulative impact would be less than significant. Section 3.15.1.3 provides further information.

3.15.1.11 Utilities and Service Systems

The only potential Project-related impact associated with this resource area pertains to the use of solid waste management facilities (landfills). The only increase in off-haul from the Project area would be up to 1,000 CY per year of sediment removed from in front of intakes. This is a very small quantity compared to existing landfill capacity. The other projects are also much more likely to import than export material. Consequently, due to the fact that Cargill imports clean material that would otherwise be taken to a landfill, and the low potential volume of off-hauled material, there would be no cumulatively significant impact.

3.15.2 Irreversible Effects

BCDC's regulations contained in 14 CCR § 11521(c) require that the EA identify all irreversible environmental impacts that the proposed activity may cause. CEQA Guidelines Section 15126.2(c) clarifies that when analyzing project impacts for an EIR, use of non-renewable resources during the initial and subsequent phases of a project may be "irreversible", if a *large commitment* of non-renewable resources may make subsequent discontinuance or removal of the project thereafter unlikely. The proposed Project is similar in nature to the work that has been previously permitted and the continuation of these efforts does not irreversibly change the baseline of resources committed.

Implementation of the proposed Project would result in the use of natural resources including fossil fuels and building materials associated with the various maintenance activities. However, the use of resources under these activities are relatively minor and, with implementation of the required avoidance and mitigation measures will be less than significant both individually and cumulatively, as discussed in this EA. In addition, much of the imported clean material would be reused material such as from construction projects. Furthermore, should Cargill decide to discontinue maintenance activities, the Project areas could be converted to other uses. Thus, the proposed Project would not result in an irreversible use of resources.

3.16 ENVIRONMENTAL JUSTICE

As defined by the State of California (OAG 2012) and USEPA (2020), environmental justice (EJ) is "The fair treatment and meaningful involvement of all people regardless of race, color, culture, national origin, income, and educational levels with respect to the development, implementation, and enforcement of protective environmental laws, regulations, and policies." Fair treatment, in turn, is defined as "The principle that no group of people, including a racial, ethnic or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies."[13] (USEPA 2020). Fair treatment also requires meaningful engagement, which involves informing the community, as well as involving the community in project discussions and seeking community input (DOE 2020).

CEQA only addresses EJ analysis for General Plans. However, consistent with State policy regarding EJ, BCDC amended the Bay Plan in May 2020 (BCDC 2020a) to include findings and policies pertaining to EJ. Other state agencies, including the RWQCB, State Lands Commission, and Caltrans, have also adopted EJ policies. In addition, EJ analysis is a requirement under the National Environmental Policy Act (NEPA), and some federal agencies may rely on information contained in portions of this EA for their NEPA review. BCDC therefore conducted an EJ analysis for the proposed Project, considering both state (BCDC) and federal criteria. Additionally, BCDC worked with Cargill to ensure that the public, including disadvantaged and vulnerable communities, were provided meaningful opportunity to comment on the proposed Project during the development of the EA (BCDC 2021).

BCDC defined the EJ study area to be composed of census tracts within one-half mile of the plant site boundaries. For this study area, BCDC performed an evaluation to determine whether communities that meet the criteria for being disadvantaged and/or vulnerable communities are present. (For ease of discussion, in this analysis these communities, which may include minority and low-income communities, are collectively referred to as disadvantaged communities.) The evaluation of whether disadvantaged communities exist in the EJ study area included both BCDC and federal criteria. Data from the U.S. Census Bureau's American Community Survey (ACS) 2015 to 2019 5-year Estimate, the CalEnviroScreen 3.0 model, the BCDC Vulnerability Mapping tool, and the Adapting to Rising Tides Flood Vulnerability Mapping tool were used to evaluate whether any disadvantaged communities exist within the study area (BCDC 2021). The locations of these disadvantaged communities are then considered with respect to potential impacts to assess whether there would be a disproportionate impact on these communities due to the implementation of the proposed Project.

[13] In implementing its programs USEPA has expanded the concept of fair treatment to include not only consideration of how burdens are distributed across all populations, but the distribution of benefits as well (USEPA 2020).

3.16.1 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are described in Table D-1.

3.16.1.1 Federal Regulatory Setting

Federal guidelines, as defined in Executive Order (EO) 12898, require federal agencies to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of their programs, policies, and activities on minority populations and low-income populations, but EO 12898 does not address thresholds of significance.

3.16.1.2 State Regulatory Setting

California Senate Bill 1000 (State of California 2016) requires certain local governments to add EJ policies to their General Plans. In addition, a number of state agencies require that consideration be given to potential EJ implications of project implementation. Two of the agencies with jurisdiction over the proposed Project, RWQCB and the State Lands Commission, have developed EJ goals. A summary of the EJ policies of these agencies is provided in the *Socioeconomics and Environmental Justice Review – Memorandum for Environmental Assessment - Cargill Solar Sea Salt System Maintenance and Operations Activities* (BCDC 2021). Caltrans relies on U.S. Department of Transportation requirements. BCDC's policies are contained in the Bay Plan, as described below.

3.16.1.3 San Francisco Bay Plan

BCDC's environmental justice and social equity policies were approved by NMFS on May 8, 2020 as a change to the San Francisco Bay segment of the State's Coastal Management Program under the Coastal Zone Management Act. For BCDC, EJ entails the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the implementation and enforcement of the McAteer-Petris Act, Suisun Marsh Preservation Act, Bay Plan and amendment process, Suisun Marsh Protection Plan, BCDC Regulations, BCDC permit process (including the Design Review Board and Engineering Criteria Review Board processes), and the Adapting to Rising Tides Program, as well as the development of BCDC's Strategic Plan. Social equity means ensuring that this and future generations have full public access to San Francisco Bay and that development approved through BCDC's permit process promotes everyone's opportunity to participate (BCDC 2019).

The Bay Plan's Environmental Justice and Social Equity Finding h defines vulnerable, disadvantaged, and underrepresented communities (BCDC 2020). As stated above, for this evaluation, the term "disadvantaged community" is used as an umbrella term to cover all types of communities that may be addressed by the environmental and social justice policies.

Pursuant to the new Environmental Justice and Social Equity policies, applicants must demonstrate "meaningful community involvement" for major projects and appropriate minor projects in underrepresented and/or identified vulnerable and or disadvantaged communities (Environmental Justice and Social Equity Policy 3). The decision whether the proposed Project is considered a major project or a minor project covered by BCDC's EJ policies will be made as part of the permitting process. Nonetheless, identifying whether a community would be disproportionately impacted by a project is an important initial step in addressing environmental justice. Taking steps to reduce such disproportionality can help ensure people are being treated fairly regardless of race, culture, and income (refer to Bay Plan Environmental Justice and Social Equity Finding e.). As defined in Bay Plan Environmental Justice and Social Equity Finding f, “fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies.”

In addition, the following Bay Plan policies may potentially be applicable to the proposed Project:

Environmental Justice and Social Equity Policy 3. Equitable, culturally-relevant community outreach and engagement should be conducted by local governments and project applicants to meaningfully involve potentially impacted communities for major projects and appropriate minor projects in underrepresented and/or identified vulnerable and/or disadvantaged communities, and such outreach and engagement should continue throughout the Commission review and permitting processes. Evidence of how community concerns were addressed should be provided. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Environmental Justice and Social Equity Policy 4. If a project is proposed within an underrepresented and/or identified vulnerable and/or disadvantaged community, potential disproportionate impacts should be identified in collaboration with the potentially impacted communities. Local governments and the Commission should take measures through environmental review and permitting processes, within the scope of their respective authorities, to require mitigation for disproportionate adverse project impacts on the identified vulnerable or disadvantaged communities in which the project is proposed.

Mitigation Policy 3. For major and appropriate minor projects that require compensatory mitigation, communities surrounding both the project and the compensatory mitigation site should be meaningfully involved in an equitable and culturally-relevant manner. In particular, vulnerable, disadvantaged, and/ or underrepresented communities should be involved. This should include consultation with the community in the identification and prioritization of potential projects, and in the monitoring and programming of a mitigation site. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Public Access Policy 5. Public access that substantially changes the use or character of the site should be sited, designed, and managed based on meaningful community involvement to create public access that is inclusive and welcoming to all and embraces local multicultural and indigenous history and presence. In particular, vulnerable, disadvantaged, and/or underrepresented communities should be involved. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

Shoreline Protection Policy 2. Equitable and culturally-relevant community outreach and engagement should be conducted to meaningfully involve nearby communities for all shoreline protection project planning and design processes – other than maintenance and in-kind repairs to existing protection structures or small shoreline protection projects – in order to supplement technical analysis with local expertise and traditional knowledge and reduce unintended consequences. In particular, vulnerable, disadvantaged, and/or underrepresented communities should be involved. If such previous outreach and engagement did not occur, further outreach and engagement should be conducted prior to Commission action.

3.16.1.4 Local Regulatory Setting

The City of Fremont General Plan's Policy 6-6.1 states that Fremont will "Promote Fremont as a city that has a broad variety of occupations and family incomes, ethnic and lifestyle diversity and a variety of housing accommodations, a broad range of commercial services, educational opportunities, and many recreational options."

The City of Hayward General Plan 2040 Community Health and Quality of Life Element includes Goal HQL-1.6 to "…address health inequities in Hayward by striving to remove barriers to healthy living, avoiding disproportionate exposure to unhealthy living environments, and providing a high quality of life for all residents, regardless of income, age or ethnicity."

The City of Menlo Park, City of Newark and Redwood City General Plans do not specify goals or policies associated with EJ.

3.16.2 Environmental Setting

3.16.2.1 Socioeconomics

Four cities and two counties have jurisdiction over portions of the three plant sites. For the purposes of this section, socioeconomic information is presented for each of these jurisdictions.

Two jurisdictions may apply to a specific plant and county jurisdictions may apply to multiple plants. For example, the Redwood City Plant is located in Redwood City and San Mateo County. Newark Plant 1 is located in the City of Fremont within Alameda County, but a small portion of the Plant is located in Hayward. Most of Newark Plant 2 is located in Newark, but a portion is also located in the City of Fremont. The socioeconomic climate around Newark Plants 1 and 2 and the Redwood City Plant is that of large, developed communities with strong economies. The most recent estimated annual population growth (2019-2020) for these communities ranges from 0.1 to 0.3 percent with the exception of the City of Newark which was at 1.7 percent. The populations of Alameda County between 2019 and 2020 grew at 0.4 percent while that of San Mateo County decreased at an annual rate of 0.1 percent (State of California Department of Finance 2020).

Since 2010, employment in the area has continued to grow, and as a result these communities were experiencing a low unemployment rate as of the most recent available yearly data. According to ACS 2010-2014 data, the majority of the jobs are in the high-wage management, professional, and related occupations sector (U.S. Census Bureau 2014). 2019 unemployment rates for all four cities and the two counties were 3.2 percent or less.

The Newark Plants 1 and 2 study area contains only a small percentage (7 percent) of the local population within the cities of Fremont, Hayward and Newark. More than one third (35.5 percent) of Redwood City's population resides within the six census tracts that comprise the Redwood City Plant study area.

The Newark plants are located in southern Alameda County while the Redwood City Plant is located in San Mateo County. The mean income for these counties is relatively high, $130,710 and $174,055, respectively as of 2019 (Table 3.16-1). These incomes are above the state and national mean incomes. The poverty rate for Alameda County based on the ACS 5-year 2019 data estimate is 9.9 percent compared to 6.7 percent for San Mateo County. Within the Project area, Redwood City had the highest population living in poverty at 9.0 percent (above the San Mateo County rate), while Fremont had the lowest at 3.4 percent, below the Alameda County rate. This is a substantially higher percentage of individuals living below the poverty line than in Redwood City as a whole. In comparison with the regional population, the Newark Plants 1 and 2 study area has higher income levels and lower poverty, while the Redwood City Plant study area has lower income levels and higher poverty rates. The Redwood City Plant study area has 15.4 percent of the population living below the poverty line.

Table 3.16-1. Reference Area Income and Poverty Rates

Site	Jurisdiction	Population	Mean Household Income	Persons in Poverty (%)
Redwood City Plant	San Mateo County	767,423	$174,055	6.7
	Redwood City	85,784	$163,498	9.0
Newark Plant 1 and Newark Plant 2	Alameda County	1,656,754	$130,710	9.9
	Hayward	159,293	$106,005	8.4
	Fremont	235,740	$160,528	3.4
	Newark	47,171	$134,710	4.8
Compare With:	State of California	39,283,497	$106,916	13.4

Source: 2015-2019 American Community Survey 5-Year Estimates Economic Characteristics Table DP03 and Poverty Status S1701 (U.S. Census Bureau 2020a and 2020b).

3.16.2.2 Racial Composition

As shown in Table 3.16-2, the racial composition of communities in the study area varies. The percentages of white-only residents range from 16.2 percent (Hayward) to 44.1 percent (Redwood City). There are more Asians in Fremont (59.4 percent) than in any other jurisdiction in the Project area, and Asians represent the racial majority in this city. Hayward, followed by Redwood City, has the highest Latino population at 40.3 percent and 35.4 percent, respectively.

The Newark Plants 1 and 2 study area has a slightly higher percentage of non-white residents than its reference cities as a whole. The Redwood City Plant study area has a 22 percent higher non-white population compared to Redwood City. Hispanic or Latino is the largest race/ethnicity group (making up 59 percent of the total population) within the Redwood City

Plant study area, while Asian is the largest minority group within the Newark Plants 1 and 2 study area making up 50 percent of the population based on the 5-year 2019 estimate.

Table 3.16-2. Reference Racial Composition Data for the Study Area

Plant Site	Jurisdiction	American Indian and Alaska Native Alone (%)	Asian Alone (%)	Black or African American Alone (%)	Hispanic or Latino (%)	White Alone (%)
Redwood City Plant	San Mateo County	0.3	27.6	2.4	24.9	52.1
	Redwood City	0.6	14.0	2.2	37.0	60.1
Newark Plant 1 and Newark Plant 2	Alameda County	0.6	28.9	11.1	22.5	42.6
	Hayward	0.7	26.0	10.2	40.4	39.9
	Fremont	0.4	57.4	3.0	13.5	24.9
	Newark	0.4	30.6	5.0	33.8	33.4
Compare With:	State of California	0.7	14.1	5.8	38.8	60.6
	United States	0.8	5.43	12.7	17.6	73.0

Source: 2015-2019 American Community Survey 5-Year Demographic and Housing Estimates Table DP05 (U.S. Census Bureau 2020c)

3.16.3 Methodology

The study area for environmental justice was defined to include census tracts within one-half mile of the three plant sites. The study area contains 5 census tracts associated with Newark Plants 1 and 2 (4415.03, 4443.02, 4445, 4446.01 and 4446.02), and 6 census tracts associated with the Redwood City Plant (6102.01, 6102.02, 6103.02, 6104, 6105, and 6117). Newark Plants 1 and 2 are contained within census tracts 4415.03 and 4443.02. The Redwood City Plant is entirely contained within census tract 6103.02. Due to the low level of potential maintenance activities associated with the Cargill West Bay areas, analysis of census tracts associated with these areas was omitted.

BCDC employed six criteria to determine whether a census tract met the definition of a disadvantaged community (BCDC 2021). These included three criteria based on information compiled by BCDC (social vulnerability, contamination vulnerability, and flooding potential as defined by the Adapting to Rising Tides flood vulnerability potential), the percentile ranking from the State of California's CalEnviroScreen model, and the two federal criteria provided in Council on Environmental Quality (CEQ) guidance (CEQ 1997) and USEPA guidance (USEPA 2016): minority population and low income population. Table 3.16-3 below summarizes the results of the analysis. Detailed information regarding the analysis is provided in the Environmental Justice and Social Equity Review Memorandum (BCDC 2021).

Table 3.16-3. Analysis of Disadvantaged Communities

Study Area	Census Tract	BCDC Criteria					Federal Criteria		
		Social Vulnerability	Contamination Vulnerability	CalEnviroScreen Percentile	Adapting to Rising Tides Vulnerability Potential for Flooding with 12 inch SLR1	Disadvantaged Community Based on BCDC Criteria?	Greater than 50% Minority Population?	Poverty Level Greater than Reference	Disadvantaged Community Based on CEQ Criteria?
Newark Plants 1 and 2	4415.03*	Low	**Moderate**	41.92	**Yes (120 units)**	Yes	Yes	2.9%	Yes
	4443.02*	Low	Lower	**58.68**	No	Yes	Yes	3.4%	Yes
	4445	Low	Lower	**67.52**	No	Yes	Yes	**4.4%**	Yes
	4446.01	Low	**Moderate**	**78.74**	No	Yes	Yes	3.2%	Yes
	4446.02	Low	Lower	**54.92**	No	Yes	Yes	2.3%	Yes
Redwood City Plant	6102.01	**Highest**	**Highest**	**80.21**	No	Yes	Yes	**22.3%**	Yes
	6102.02	**High**	Lower	**69.08**	**Yes (132 units)**	Yes	Yes	**15.3%**	Yes
	6103.02	**Moderate**	**Highest**	**63.83**	**Yes (1,188 units)**	Yes	Yes	**11.3%**	Yes
	6104	**High**	Lower	**62.73**	No	Yes	Yes	**14.8%**	Yes
	6105	**High**	Lower	**68.68**	No	Yes	Yes	**15.3%**	Yes
	6117	Not Calculated	Lower	45.49	No	No	Yes	**13.5%**	Yes

Sources: BCDC 2020, American Community Survey data (2016-2020).
Federal criteria from CEQ 1997, USEPA 2016.
Notes:
1. Vulnerability Potential for Flooding (residential exposure to sea level rise): Units counts are from the Adapting to Rising Tides Flooding Potential Query Tool (BCDC 2020b). The methodology assumes that once a parcel is exposed to any amount of flooding, the entire number of residential units within that parcel are impacted.
2. Poverty Rates for Surrounding Areas:

- The surrounding areas poverty rate for the Newark Plant Sites is the average of the poverty rates for the Cities of Hayward, Newark, and Fremont (5.4%).
- The surrounding areas poverty rate for the Redwood City Plant Site is the City of Redwood City overall poverty rate (9.0%).

For the purposes of this EA, if a census tract met one or more of the criteria for disadvantage, the census tract was considered a disadvantaged community. The six criteria are:

- Social vulnerability: highest, high or moderate social vulnerability
- Contamination vulnerability: highest, high or moderate contamination vulnerability
- Adapting to Rising Tides flood vulnerability potential: potential for flooding of any portion of the census tract with 12 or more inches of sea level rise
- CalEnviroScreen model: 50^{th} percentile or higher
- Minority population: 50 percent or higher minority population
- Low income population: low income population higher than the reference location.

The reference locations for the low income population criterion were the surrounding cities. For the portion of the study area adjacent to the Redwood City Plant, the reference location is the City of Redwood City as a whole. For Newark Plants 1 and 2, the reference location is the average data for the cities of Fremont, Hayward, and Newark. Based on this analysis, all census tracts in the study area are defined as disadvantaged communities based on federal criteria, and all but one of the census tracts are defined as disadvantaged communities based on BCDC criteria. Given the results of this analysis, the entire EJ study area was evaluated with respect to potential disproportionate impacts.

3.16.4 Impact Analysis

3.16.4.1 Air Quality

Project and cumulative air quality impacts are addressed in Section 3.3 according to the methodology and significance criteria of the BAAQMD as documented in their *CEQA Air Quality Guidelines* (BAAQMD 2017b). Project emissions of criteria air pollutants from Redwood City and Newark plant maintenance activities are considered to be a regional (Bay Area wide) issue, and were found to be substantially below the BAAQMD's average daily and annual thresholds that gauge the potential for significant impact on Bay-Area-wide ozone and ambient particulate levels. Thus, the entire Bay Area population, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant worsening of ambient ozone or particulate levels caused by continued facility maintenance activity.

Health risk and particulate matter analysis are evaluated on a local scale. BAAQMD defines 1,000 feet as the "zone of influence" for health risk and particulate matter analysis. Most of the area within 1,000 feet of the Redwood City and Newark plant sites consists of San Francisco Bay water surface, public recreational open space, wildlife habitat, or areas containing primarily commercial/industrial land uses, all of which are considered by the BAAQMD as less sensitive to TAC exposures than residential areas, schools, hospitals, nursing homes, and other similar land uses. But there are TAC-sensitive receptors in the Cargill plants' zones of influence, termed maximally exposed sensitive receptors (MESRs) for this analysis. In Redwood City, just south of the Cargill southern boundary, mobile home parks occupy a substantial area between Cargill and Highway 101 (i.e., the RC Mobile Home Park, Redwood Mobile Estates, Harbor Village

Mobile Home Park, and Trailer Rancho, as identified in Google Earth); other single-family residential uses extend south of Highway 101, east of 2nd Street. In Newark, the only residential development in the zone of influence is at the south end of Central Avenue. At both of these locations, some residents may be located less than 100 feet from a potential maintenance location, which is well within the 1,000 foot zone of influence typically used to evaluate potential cumulative air quality impacts.

Project health risk and particulate matter impacts were found to be substantially below the BAAQMD's thresholds that evaluate the potential for significant cancer risk, non-cancer chronic health hazard, and fine particulate exposures on local sensitive receptors. Thus, the local population in all residential areas in the Cargill zones of influence, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant Project health risk or particulate levels caused by continued facility maintenance activity.

3.16.4.2 Biology

The Project would not result in significant biology impacts; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

3.16.4.3 Cultural Resources

The Project would not result in any known significant impacts in the area of cultural and historical resources. Mitigation measures are in place in the event unknown archaeological resources or human remains are inadvertently encountered during earthwork activity. Tribal consultation and outreach to Native American tribal representatives has taken place and comments received from two such representatives. No Environmental Justice issues would result in the area of cultural resources.

3.16.4.4 Geology and Soils

The proposed Project would not create any new structures in disadvantaged communities or that would affect any disadvantaged communities, and there would be no impacts associated with potential failure of new Project-related structures. Maintaining the berms and conducting SLR adaptation activities would minimize the risk of a berm failure, thereby minimizing the risk of flooding associated with berm failure. Therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area.

3.16.4.5 Greenhouse Gases

Project GHG emission impacts are addressed in Section 3.7 according to the methodology and significance criteria of the BAAQMD as documented in their *CEQA Air Quality Guidelines* (BAAQMD 2017b). Project emissions of GHGs are considered to be a global concern that could lead to local effects such as flooding due to SLR. Project GHG emissions from Redwood City and Newark plant maintenance activities were found to be substantially below the BAAQMD's annual threshold that evaluates the potential for a project's significantly contributing to global climate change. Thus, the entire Bay Area population, regardless of race, color, culture, national origin, income, and educational levels, would not be subject to significant worsening of global climate and associated consequences as a result of Project-related GHG emissions.

3.16.4.6 Hazards and Hazardous Materials

The proposed Project would use small quantities of hazardous materials as part of routine operations. All such use would be in accordance with applicable regulations and would be consistent with existing levels of use. Two of the census tracts in the Environmental Justice study area for the Redwood City Plant are rated as having the highest contamination vulnerability. The contamination vulnerability indicator assesses the potential for a community to be exposed to elevated levels of pollution should flooding occur. The continued routine use of small quantities of hazardous materials would not exacerbate this risk, and would not cause a disproportionate impact to disadvantaged communities.

Hydrology and Water Quality

The Project would not result in significant hydrology/water quality impacts; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

3.16.4.7 Noise

The Project, including its waterfront improvements, is located near existing communities with disadvantaged populations. However the Project’s maintenance activities will not generate significant noise level increases compared with existing onsite operational activities.

Newark Plants 1 and 2

Some residential area near the Newark City Plants 1 and 2 have minority populations exceeding 50 percent; some areas also have meaningfully greater poverty levels than the Fremont/Hayward/Newark area as a whole. As discussed in Section 3.10, the Project's noise impacts would be less than significant. Accordingly the environmental justice impact due to noise or vibration impacts to these identified disadvantaged communities would be less than significant.

Redwood City Plant

The mobile homes and RVs adjacent to the Redwood City Plant are identified as being in a moderately vulnerable area by the BCDC mapping tool. This area also has a substantially higher poverty rate than Redwood City as a whole. However, the Project's new maintenance activities will not be significantly louder at those adjacent dwellings than existing maintenance work. As discussed in Section 3.10, noise level increases at these dwellings are predicted to be less than 1.5 dBA L_{dn} greater in magnitude than the existing maintenance noise levels that are already permitted. These adjacent dwellings are already exposed to loud freeway noise levels greater than 70 dBA L_{dn}. Therefore, because the Project's noise impacts to the adjacent mobile homes and RVs would be less than significant, their residents will not be exposed to a significant environmental justice impact.

Other vulnerable communities within a 0.5-mile radius of the Redwood City Plant will not be impacted by Project noise or vibration levels. At those distances, Project noise levels would be lower than the ambient noise levels predominantly from traffic, so those communities would not experience noise impacts from this Project. Therefore, there would be no disproportionate noise impacts to disadvantaged communities in the vicinity of the Redwood City Plant.

3.16.4.8 Transportation

The proposed Project would use relatively small numbers of truck trips (up to 50 truck trips per day) as part of routine operations. This is a less than significant impact to local residential areas near the truck travel routes. The locations that will receive trucks are relatively remote from residential communities. The Project would therefore not result in significant transportation impacts and would not have a disproportionate impact on disadvantaged communities near the Project area.

3.16.4.9 Tribal Cultural Resources

The Project would not result in any known significant impacts in the area of tribal cultural resources. Section 3.16.4.3 provides further information.

3.16.4.10 Utilities and Service Systems

The Project would not result in any significant impacts to utilities and service systems; therefore, the Project would not have a disproportionate impact on disadvantaged communities near the Project area, and no mitigation is required.

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4.0 DOCUMENT PREPARATION

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6.0 GLOSSARY

A	Anadromous (fish)	(Fish) migrating from salt water to spawn in fresh water
B	Benthic	Pertaining to the biogeographic region that includes the bottom of a lake, sea, or ocean, and the littoral and supralittoral zones of the shore
	Berm or Earthen Berm	Sloped soil dike structures with flat tops constructed to separate Cargill's solar salt system from the Bay and from local streams and flood control channels
	Bittern	Historical term for mixed sea salts (MSS).
	Brine	Sea or ocean water, water saturated with salt. Concentrated salt water in the evaporation salt ponds.
	Brine Channel (or Brine Ditch)	Brine channels (also known as brine ditches) are narrow, earthen, unvegetated channels used to convey brines between salt ponds. They serve the same purpose as pipes.
C	Choker Berm	A very small berm (typically 6 inches high or less, and less than 1 foot wide) on the outer side of an outboard berm top.
	Concentrator	A solar evaporative pond that increases the salinity of Bay sea water or lower salinity brine.
	Crystallizer	The high salinity ponds where the salt is precipitated for harvest.
D	Donuts (pumping)	Pumping donuts are small ponds with berms, similar to locks that have tidal gates that collect Bay water.
E	*Evaporator (Pond)*	Same as "Concentrator."
I	Inboard	The interior or pond side (versus Bay side) of the earthen berms.
	Internal	Berms on the interior of the pond system, with no contact with Bay waters.
	Intake Structures	Intake structures consist of tide gates and pumps to bring Bay water into the system under controlled conditions. They are located at the beginning of the salt pond system.
L	Lock	Locks are small ponds, generally less than 1 acre in size, that are used by water-borne equipment to access salt ponds. Use of the locks prevents a direct connection between a salt pond and external (Bay or slough) waters.

M	Mallard	From 1952 until 2016, Cargill utilized the excavation vessel “Mallard” to maintain the pond berms when using land-based equipment was not feasible. The Mallard has been decommissioned.
	Mixed Sea Salts	After the majority of the NaCl is precipitated, the remaining brine, which primarily contains salts that are more soluble than NaCl, is referred to as mixed sea salts. The mixed sea salts contain chloride, bromide, sulfate, sodium, potassium, and magnesium, as well as residual NaCl. Also referred to as “bittern.”
N	NaCl	Sodium chloride (table salt)
O	Outboard	Fronting the Bay, sloughs, or creeks
P	Pickle	High salinity feedstock brine for the crystallizers.
	Pickle Pond	A salt pond containing highly concentrated, saturated brine that is stored prior to harvest and where additional evaporation may occur.
	Pelagic	Organisms living in the open ocean, usually at or near the surface
R	Refuge	The Don Edwards San Francisco Bay National Wildlife Refuge
	Roosting (birds)	Birds resting on a pond or berm.
S	Siphon	A pipe that passes underneath a slough, channel, or creek to connect two salt ponds.
	Special-Status Species	Designated (rare, threatened, or endangered) and candidate species for listing by the California Department of Fish and Wildlife (CDFW) and designated (threatened or endangered) and candidate species for listing by the U.S. Fish and Wildlife Service (USFWS).
	Silt Curtains	Portable underwater “screens” (made from a variety of materials) used to prevent disturbed silt from migrating away from the disturbance site.
T	Tide Gate	An inlet control gate, operated by a turning “screw” mechanism to raise and lower the gate, to control the flow of Bay water into the pond system. The tide gate is usually connected to a culvert (pipe).
	Transbay Pipeline	A 7,000-foot, 20-inch-diameter steel pipeline slip-lined with 16-inch PVC that crosses the Bay from the Redwood City Plant to Plant 1 in Newark. The pipeline has multiple pumps in

		series that provide the capacity to transfer brine in both directions.
W	Wash Pond	A wash pond holds brine used to wash sediment out of harvested salt. Wash brine is reused after sediment in used wash brine has settle out in the wash ponds.
	Williamson Act	The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use.

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APPENDIX A USACE Approval Letter for Mitigation in Perpetuity

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DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
211 MAIN STREET
SAN FRANCISCO, CALIFORNIA 94105-1905

REPLY TO
ATTENTION OF:

Regulatory Branch

Subject: File Number 19009S98

Mr. Bob Douglass
Cargill Salt
7220 Central Avenue
Newark, California 94560-4206

Dear Mr. Douglass:

Enclosed are two copies of a Department of the Army (DA) permit to perform solar salt production activities in South San Francisco Bay, in Alameda, Santa Clara and San Mateo Counties, California.

Please sign both copies on the line designated for permittee. Your signature should be notarized and both copies of the permit must be returned for my signature along with a check for $100 made payable to "F&A Officer, USAED, Sacramento." We will then forward one copy of the permit for your records, at which time you will be authorized to commence work.

Under this permit, the Corps hereby issues specific approval for the commencement of activities related to restoring 49 acres of salt marsh habitat as described in Attachment D, entitled "Salt Evaporator Pond B-1 Tidal Marsh Restoration" revised July 1995. Approval to perform the other activities described in the 1995-1996 Annual work plan will be forthcoming once the Corps has completed its evaluation of the plan following review by the cooperating Agencies and interested public.

The 49-acre restoration project is intended to satisfy the compensatory mitigation requirement for activities associated with the ongoing solar salt production in south San Francisco Bay over the life of this permit, and, if the nature of the work remains the same, beyond to subsequent permits as well.

Sincerely,

Michael J. Walsh
Lieutenant Colonel, Corps of Engineers
District Engineer

Enclosures

2000.005: 0a

Mapelli, Pat D. - Pat_Mapelli@cargill.com

From: Paula.C.Gill@spd02.usace.army.mil
Sent: Monday, March 09, 2009 2:57 PM
To: Mapelli, Pat D. - Pat_Mapelli@cargill.com
Subject: LTC Walsh Mitigation Letter

Dear Mr. Mapelli-

We will honor the first transmittal letter for the 1995 Operations and Maintenance permit signed by LTC Walsh, provided the nature of the work remains the same.

Please note that there are still outstanding consultations with the USFWS and the NMFS for effects to federally-listed species and essential fish habitat. I spoke with Gary Stern, he hopes to review the submittal and determine if he requires any additional information by the end of the month.

We will notify you when we have more information regarding the consultation process.

Best,
Paula Gill

U.S. Army Corps of Engineers
Regulatory Division, 16th Floor
1455 Market Street
San Francisco, CA 94103
(415) 503-6776

APPENDIX B Example Completion Report

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Maintenance Completion Report

June 2018 – May 2019

August 30, 2019

Cargill Salt Completed Work 2018-2019
Army Corps of Engineers Permit #2008-001605
San Francisco Bay Conservation and Development Commission Permit 4-93

Baumberg

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
1	2C	Plug Cal-Hill transfer Pump pipeline	TBD	N/A[3]	N/A[3]	TBD	Plug Cal-Hill transfer pump pipeline.		
2	3C	Grading/berm road maintenance	Ongoing	N/A[3]	2b	8,600 lf	Routine grading of berm top to provide vehicle access.		
3	3C	Remove or plug pipe from CP-4C to 3C	Ongoing	N/A[3]	N/A[3]	Earth plugs at each end	Plug existing pipe from CP-4C to 3C. CP-4C is operated by CDFW.		
4	3C	General berm maintenance	Ongoing	2a	2a	750 lf 400 cy	Repair/Maintain berm erosion on beach face with land-based equipment as needed (inside).		
5	3C	Place rock on roads	Ongoing	N/A[3]	N/A[3]	6,300 lf 800 cy	Allow all weather access.		

Cargill-West Bay

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
6	SF2	To transfer brines between Redwood City and Newark	Ongoing	N/A[3]	2c	20' x 20' Pad	New Work - Relocate portable pump on berm to dedicated pump pad.		
7	SF2	General berm maintenance	Ongoing	2a	2a	500 lf 260 cy	Build up low areas on berm top as needed with land-based equipment.		
8	SF2	Rip Rap (inside)	Ongoing	1e	2a	500 lf 300 cy	Maintenance of existing rip rap areas.		

[1]All routine grading of berm top to provide discing and rip-rapping are routine, preventative maintenance activities unless otherwise identified.
[2]What is provided below identifies appropriate permit conditions. Many activities identified in the work plan are outside COE/BCDC authority/jurisdiction. These are identified in the workplan for completeness and information only.
[3]Where there is tentative agreement between COE/BCC and Cargill that these activities are outside the jurisdiction area, these areas are marked “N/A.” The Corps and BCDC will make the final determination.

Cargill Salt Completed Work 2018-2019
Army Corps of Engineers Permit #2008-001605
San Francisco Bay Conservation and Development Commission Permit 4-93

Redwood City Plant Site

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
9	7A, 7B, 7C,	Grading/berm road maintenance	Ongoing	N/A[3]	2b	34,570 lf	Routine grading of berm top to provide vehicle access.		
10	PP-7B	General berm maintenance	Ongoing	2a	2a	3,000 lf 1,560 cy	Build up/Maintain low areas as needed with land based equipment.	3000 lf 216 cy	Work completed outside nesting period for snowy plover.
11	PP-7C	General berm maintenance	Ongoing	2a	2a	2,500 lf 1,300 cy	Build up/Maintain low areas as needed with land based equipment.	2000 lf 144 cy	Work completed outside nesting period for snowy plover.
12	PP-7C	General berm maintenance	Ongoing	2a	2a	400 lf 800 cy	Spot repair outboard berm.		
13	PP-7C	General berm maintenance	Ongoing	2a	2a	400 lf 800 cy	Repair erosion to outboard berm face due to storm water channel run off into berm caused by county/city storm water channel at Belle Haven Pump.		
14	9A	Rip Rap	Ongoing	1e	1c	200 lf 250 cy	Maintenance of existing rip rap areas.		
15	9	Rip Rap	Ongoing	1e	1c	350 lf 175 cy	Maintenance of existing rip rap areas.		
16	10	Rip Rap	Ongoing	1e	1c	500 lf 625 cy	Maintenance of existing rip rap areas.		
17	Brine Ditch	General berm maintenance	Ongoing	2a	2a	5,000 lf	Compact internal core of berm as needed.		

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Plant 1

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
18	1-9, 1A – 4A,	Grading	Ongoing	N/A[3]	2b	66,210 lf	Routine grading of berm top to provide vehicle access.	66,000 lf	Work completed outside nesting period for snowy plover.
19	1	Place rock on roads	Ongoing	N/A[3]	N/A[3]	500 lf 80 cy	Allow all weather access.	500 lf 70 cy	Work completed outside nesting period for snowy plover.
20	1	General berm Maintenance	Ongoing	2a	2a	25 lf 10 cy	New Work - Repair berm erosion with land based equipment as needed.		
21	1A, 2A	Berm topping or beaching	Sept 18 – Jan 20	2a	2d	1,290 lf	Top and beach with pond muds with barge mounted equipment (cross berm).		
22	1A	Maintain inlet channel to Coyote intake pump platform	TBD	1b	1g	300 lf 2,000 cy	TBD		
23	1A	Plug Cal-Hill transfer pump pipeline	TBD	N/A[3]	N/A[3]	TBD	Plug Cal-Hill transfer pump pipeline.		
24	1A	Berm topping or beaching	Ongoing Sep 18 – Jan 20	2a	2d	4,440 lf	Top and beach with pond muds (cross berm).		
25	1A	General berm maintenance	Ongoing	2a	2a	950 lf 325 cy	Repair berm erosion with land based equipment as needed. Rebuilt berm using same material that was in pond.	400 LF 0 CY	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
26	1A	Rip Rap (Inside)	Ongoing	1e	2a	100 lf 100 cy	Maintenance of existing rip rap areas.		
27	1A	Other work	Ongoing	1d	2b	TBD	Remove old pump platform structure from pond.		
28	2	Berm topping or beaching	Ongoing	2a	2d	6,800 lf	Top and beach with pond muds.		
29	2	Berm topping or beaching	Ongoing	2a	2d	5,500 lf	Top and beach with pond muds (cross berm).		

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Cargill Salt Completed Work 2018-2019
Army Corps of Engineers Permit #2008-001605
San Francisco Bay Conservation and Development Commission Permit 4-93

Plant 1

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
30	2	General berm maintenance	Ongoing	2a	2a	825 lf / 2,000 cy	Build up berm top low spots with land-based equipment (CP-2 cross berm and Old Beard Creek).		
31	2	Enter lock	Sep 18 – 19-Jan	2d	1a	50 lf / 400 cy	Enter lock		
32	2	Exit lock	Sep 18 – 19-Jan	2d	1a	50 lf / 400 cy	Exit lock		
33	2	Enter lock	Sep 19 – 20-Jan	2d	1a	50 lf / 400 cy	Enter lock		
34	2	Other work	Ongoing	2f	2b	TBD	New Work - Construct pump platform		
35	2	General berm maintenance	Ongoing	2a	2a	400 lf / 250 cy	New Work - Build up siphon donut berm with land based equipment.		
36	2A	Rip Rap	Ongoing	1e	1c	300 lf / 1,200 cy	Maintenance of existing rip rap areas.	125 lf / 900 cy	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
37	2A	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	11,700 lf	Beach with pond muds.		
38	2A	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	11,640 lf	Top and beach with pond muds (cross berm).		
39	2A	General berm maintenance	Ongoing	2a	2a	400 lf / 250 cy	Build up lock berm with land based equipment.		

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Plant 1

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
40	2A	Enter lock	Sep 18 – 19-Jan	2d	1a	50 lf 400 cy	Enter lock for maintenance on system berms.		
41	2A	General berm maintenance	Ongoing	2a	2a	100 lf 50 cy	Repair berm erosion with land based equipment as needed.	40 lf 50 cy	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
42	2A	Other work	Ongoing	1d	2b	TBD	New Work - Construct intake pump platform.		
43	2A	Exit lock	Sep 19 – 20-Jan	2d	1a	50 lf 400 cy	Exit lock.		
44	2A	Exit lock	Sep 20 – 21-Jan	2d	1a	50 lf 400 cy	Exit lock.		
45	3	Rip Rap	Ongoing	1e	1c	100 lf 1,500 cy	Maintenance of existing rip rap areas.	100 lf 400 cy	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
46	3	General berm maintenance	Ongoing	2a	2a	5,500 lf 5,000 cy	Build up berm face areas that show signs of erosion with land based equipment.		
47	3	Other work	Ongoing	1a	2a	TBD	Repair or replace 36" pipe and gate (3 to 2).		
48	3	Other work	Ongoing	2a	2e	3 locations	Cut three (3) 12' lf gap in cross berm of CP-3 and Old Beard Creek using land based equipment.		
49	3	Berm topping or beaching	Ongoing	2a	2d	11,400 lf	Top and beach with pond muds (Bayshore).		
50	3	Berm topping or beaching	Ongoing	2a	2d	13,650 lf	Top and beach with pond muds (cross berm).		
51	3	Enter pond	TBD	N/A[3]	N/A[3]	TBD	New Work – Enter alternate equipment into pond from along berm.		

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Army Corps of Engineers Permit #2008-001605
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Plant 1

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
52	3A	Routine maintenance	Ongoing	1a	2a	TBD	Repair or replace 36” pipe and gate (3A to 4A).		
53	3A	General berm maintenance	Ongoing	2a	2a	80 lf 35 cy	New Work - Repair berm top erosion with land based equipment as needed.		
54	4	General berm maintenance	Ongoing	2a	2a	500lf 2000 cy	Build up berm low spots with land based equipment (cross berm in front of Little Joe pump station).	100 lf 300 cy	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
55	4	Rip Rap	Ongoing	1e	1c	4,000 lf 5,000 cy	Maintenance of existing Bay Shore rip rap areas.	125 lf 175 cy	Work completed outside nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
56	4	berm topping or breaching	Ongoing Sep 18 – Sep 20	2a	2d	1,200 lf	Top and beach with pond muds (cross berm).		
57	4	Routine maintenance	Ongoing	1a	N/A[3]	TBD	Repair Little Joe Pump Platform.		
58	4	Berm topping or breaching	Ongoing Sep 18 – Sep 20	2a	2d	8,000 lf	Beach with pond muds.		
59	4	Enter pond	TBD	N/A[3]	N/A[3]	TBD	New Work – Enter alternate equipment into pond form along berm.		
60	4A	Routine maintenance	Ongoing	1a	N/A[3]	TBD	Repair pump pipe.		
61	4B	Rip Rap (Inside)	Ongoing	1e	2a	200 lf 500 cy	Maintenance of existing rip rap areas.		
62	4B, 9	Place rock on berm road top	Ongoing	N/A[3]	2a	2,400 lf 340 cy	Allow all weather access to Big Dan Pump.		
63	4B, 9	General level maintenance	Ongoing	2a	2a	80 lf 30 cy	Repair berm face erosion with land based equipment as needed (cross-berm).		
64	5	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	5,400 lf	Beach with pond muds.		

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Army Corps of Engineers Permit #2008-001605
San Francisco Bay Conservation and Development Commission Permit 4-93

Plant 1

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
65	5	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	6,500 lf	Top and beach with pond muds (cross berm).		
66	5	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	2,500 lf 390 cy	Allow all weather access.		
67	6	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	3,300 lf	Top and beach with pond muds (cross berm).		
68	7	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	2,500 lf 390 cy	Allow all weather access.		
69	7	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	10,000 lf	Top and beach with pond muds (cross berm).		
70	8	Berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	4,000 lf	Top and beach with pond muds (cross berm).		
71	9	berm topping or beaching	Ongoing Sep 18 – Sep 20	2a	2d	4,350 lf	Top and beach with pond muds (cross berm).		
72	PP1	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	5,000 lf 780 cy	Allow all weather access.		
73	PP1	Place soil with trucks	Ongoing	N/A[3]	2a	2,100 lf 28,000 cy	Build up low area as needed with land based equipment.		
74	PP1	General berm maintenance	Ongoing	N/A[3]	2a	2,700 lf	Build up existing berm along inside of berm with land based equipment.		

Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
75	1-13, 26-28	Grading	Ongoing	N/A[3]	2b	70,800 lf	Routine grading of berm top to provide vehicle access.	70,800 lf	Work completed outside nesting period for snowy plover.
76	1	Discing	Ongoing 2018	N/A[3]	2b	11,200 lf	Routine discing of berm top to provide vehicle access.	11,200 lf	Work completed outside nesting period for snowy plover.

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
77	1	Other work	Ongoing	1d	2b	Same footprint	Remove and Replace existing intake pump platform.	Same footprint	Work completed outside nesting period for snowy plover.
78	1	General berm maintenance	Ongoing	2a	2a	750 lf	Build up berm with land based equipment.	750 lf	Work completed outside nesting period for snowy plover.
79	1	General berm maintenance	Ongoing	2a	2a	50 lf 30 cy	Repair berm low area erosion with land based equipment.		
80	2	Routine maintenance	Ongoing	1a	2a	TBD	Repair or replace 36" screw gate (2 to 3).		
81	2	General berm maintenance	Ongoing	2a	2a	40 lf 25 cy	Repair berm erosion with land based equipment.		
82	2	General berm maintenance	Ongoing	1e	1c	25 lf 20 cy	Repair berm erosion with land based equipment (cross-berm).		
83	2	Discing	Ongoing 2018	N/A[3]	2b	14,500 lf	Routine discing of berm top to provide vehicle access.		
84	3	General berm maintenance	Ongoing	2a	2a	120 lf 40 cy	Repair berm erosion with land based equipment (cross-berm).	50 lf 40 cy	Work completed outside nesting period for snowy plover.
85	3	Discing	Ongoing 2018	N/A[3]	2b	11,700 lf	Routine discing of berm top to provide vehicle access.	11,700 lf	Work completed outside nesting period for snowy plover.
86	3	Routine Maintenance	Ongoing	1a	2a	TBD	Repair pump pipeline and supports.		
87	3	Other work	Ongoing	1d	2b	TBD	Clean and remove sediment buildup in front of siphon as needed.		
88	3	General maintenance	Ongoing	2a	2a	6,500 lf	Build up berm top with land based equipment.		
89	4	Other work	Ongoing	1d	2b	TBD	Clean and remove sediment buildup in front of siphon as needed.		
90	4	Rip Rap (Inside)	Ongoing	1e	2a	200 lf 118 cy	Maintenance of existing rip rap areas.		

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
91	4	Other work	Ongoing	1a	2b	20'w x 40'l	Replace gate box between CP-4 and CP-5.		
92	5	General berm maintenance	Ongoing	2a	2a	400 lf	Build up berm low spot with land based equipment at CP-5/6 cut.		
						1,000 cy			
93	5	General berm maintenance	Ongoing	2a	2a	500 lf	Compact internal core of bypass channel berm (5/6) as needed.		
94	6	General berm maintenance	Ongoing	2a	2a	4,400 lf	Compact internal core of berm as needed.		
95	6	Rip Rap (Inside)	Ongoing	1e	2a	1,000 lf	Maintenance of existing rip rap areas.	300 lf	Work completed outside the nesting period for snowy plover.
						1,500 cy		450 cy	
96	6	Discing	Ongoing 2018	N/A[3]	2b	8,500 lf	Routine discing of berm top to provide vehicle access.	1,000 lf	Work completed outside the nesting period for snowy plover.
97	6	General berm maintenance	Ongoing	2a	2a	6,500 lf	Build up berm with land based equipment.		
98	PP7	Routine maintenance	Ongoing	1a	2a	TBD	Repair wash water ditch pump to Cp3 pump pipe and supports.		
99	PP7	General berm maintenance	Ongoing	2a	2a	5,200 lf	Build up areas of cross berm with land based equipment.		
						20,000 cy			
100	PP7	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	5,000 lf	Place rock on road for all weather access to Mowry siphon pump.	3,000 lf	Work completed outside the nesting period for snowy plover.
						800 cy		500 cy	
101	PP7	Rip Rap (Inside)	Ongoing	1e	2a	800 lf	Maintenance of existing rip rap areas.		
						600 cy			

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Cargill Salt Completed Work 2018-2019
Army Corps of Engineers Permit #2008-001605
San Francisco Bay Conservation and Development Commission Permit 4-93

Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
102	PP7	General berm maintenance	Ongoing	2a	2a	6,000 lf 5,500 cy	Repair interior berm slope due to erosion.		
103	PP7	Other work	Ongoing	2b	2d	500 cy	Remove accumulation of sediment from dredge lock as needed. The mud will be placed on inside berm toe of PP7.		
104	PP8	General berm maintenance	Ongoing	N/A[3]	2a	7,100 lf 7,300 cy	Build up berm top with land based equipment.		
105	PP8	Other work	Ongoing	2d	2d	500 cy	Remove sedimentation from lock as needed. The mud will be placed on inside berm toe of PP8.		
106	PP8	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	8,200 lf 485 cy	Place rock on roads for all weather access to wash water ditch pump.	6,000 lf 400 cy	Work completed outside the nesting period for snowy plover. Biological monitor present during course of work, including any tidal marsh vegetation removal.
107	PP8	General berm maintenance	Ongoing	2a	2a	1,400 lf 1,200 cy	Maintain areas on berm top using land based equipment (wash water ditch pump-PP8).		
108	PP8	Rip Rap (Inside)	Ongoing	1e	1c	22,000 lf 8,000 cy	Maintain existing rip rap inside toe of berm. The use of filter fabric will be used under rip rap.		
109	PP8 Crystallizer 26	General berm maintenance	As needed, based upon regular inspections	2a	2a	3,000 lf 1,800 cy	Maintain berms as needed.		
110	Dredge lock next to Crystallizer 26	Enter lock	Sep 18 – Jan 19	2d	1a	50 lf 400 cy	Enter lock.		

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
111	Crystallizer 26	General berm maintenance	Ongoing	N/A[3]	2a	2,000 lf 2,600 cy	Build up berm with land based equipment.		
112	Crystallizer 26	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	4,900 lf 600 cy	Place rock on roads for all weather access.	4,000 lf 600 cy	Work completed outside the nesting period for snowy plover.
113	CX 26 Lock	General berm maintenance	Ongoing	2a	2a	400 lf 300 cy	Build up lock berm with land based equipment.		
114	10 De-Salting Pond	General berm maintenance	Ongoing	N/A[3]	2a	10,000 lf 10,400 cy	Build up cross berm with land based equipment.		
115	10 De-Salting Pond	General berm maintenance	Ongoing	2a	2a	1,400 lf 900 cy	Build up berm with land based equipment.		
116	10 De-Salting Pond	General berm maintenance	Ongoing	N/A[3]	2a	3,200 lf 3,300 cy	Build up berm with land based equipment.		
117	10 De-Salting Pond	General berm maintenance	Ongoing	2a	2a	1,400 lf	Compact internal core of berm as needed.		
118	11 De-Salting Pond	General berm maintenance	Ongoing	2a	2a	1,800 lf	Compact internal core of berm as needed.		
119	11 De-Salting Pond	Rip Rap (Inside)	Ongoing	1e	2a	570 lf 395 cy	Maintain existing Rip Rap Inside toe of berm.		
120	11 De-Salting Pond	General berm maintenance	Ongoing	N/A[3]	2a	1,500 lf 800 cy	Repair inside berm slope.		

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
121	12 Bittern Pond	General berm maintenance	Ongoing	2a	2a	300 lf 500 cy	Repair inside berm slope.		
122	12 Bittern Pond	General berm maintenance	Ongoing	N/A[3]	2a	8,000 lf 7,200 cy	Build up berm with land based equipment.		
123	12 Bittern Pond	General berm maintenance	Ongoing	2a	2a	7,000 lf	Compact internal core of berm as needed.		
124	12 Bittern Pond	General berm maintenance	Ongoing	N/A[3]	2a	3,000 lf 1,000 cy	Build up low areas as needed with land based equipment.		
125	12 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	2a	1,500 lf 1,300 cy	Maintenance of existing rip rap areas.		
126	12 Bittern Pond	Other work	Ongoing	1a	2b	TBD	Replace gate box between BP-12 and DSP-11.		
127	12 Bittern Pond	Routine Maintenance	Ongoing	1a	2b	25 lf 150 cy	Replace 36" screw gate and pipe (36" x 50') at siphon donut.		
128	13 Bittern Pond	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	3,000 lf 500 cy	Place rock on road for all weather access.	1,600 lf 110 cy	Work completed outside the nesting period for snowy plover.
129	13 Bittern Pond	Rip Rap (Inside)	Ongoing	1e	2a	3,000 lf 1,540 cy	Maintenance of existing rip rap areas.		
130	13 Bittern Pond	General berm maintenance	Ongoing	N/A[3]	2a	3,500 lf 2,500 cy	Build up low areas as needed with land based equipment.		
131	13 Bittern Pond	General berm maintenance	Ongoing	2a	2a	10,000 lf	Compact internal core of berm as needed.		

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
132	FMC 1 – FMC 6	Grading	Ongoing	N/A[3]	2b	10,300 lf	Routine grading of berm top to provide vehicle access.	9,000 lf	Work completed outside the nesting period for snowy plover.
133	FMC 5	General berm maintenance	Ongoing	N/A[3]	2a	1,100 lf	Build up cross berm top as needed with land based equipment.		
						450 cy			
134	FMC 6	General berm maintenance	Ongoing	N/A[3]	2a	800 lf	Build up low areas as needed with land based equipment.	200 lf	Work completed outside the nesting period for snowy plover.
						1,200 cy		80 cy	
135	FMC 6	Rip Rap (Inside)	Ongoing	1e	2a	1,800 lf	Maintenance of existing rip rap areas.	200 lf	Work completed outside the nesting period for snowy plover.
						2,100 cy		250 cy	
136	FMC Pond Area	Place rock on berm road top	Ongoing	N/A[3]	N/A[3]	10,500 lf	Place rock on roads for all weather access.	4,851 lf	Work completed outside the nesting period for snowy plover.
						1,200 cy		870 cy	
137	FMC Pond Area	Other work	Ongoing	1a	2b	40 sq. ft.	Replace existing pump platform at western end of deep toe ditch.		
138	FMC Ditch	Routine maintenance	Ongoing	1a	2b	47 lf	Replace 36” screw gate and pipe (36” x 50’).		
						51 cy			

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Plant 2

Task No.	Ponds Involved	Activity[1]/Function	Duration of Activity	COE[2]	BCDC[2]	Size/Scope Proposed	Comments	Size/Scope Completed	Biological Survey Requirements Implemented
139	Mowry Slough	Maintain inlet channel to multi-purpose ditch	TBD	N/A[3]	1h	40' x 150' x 6'			
						1,500 cy			
140	Perimeter Ditch and berm	Bridge approach ditch and new culvert work	TBD	2f	2c	TBD	New Work – Build up the perimeter berm and install new culvert with land based equipment for the bridge approach.		
141	Plummer Creek	Channel crossing	TBD	N/A[3]	Administrative Permit	TBD	New Work - Construct channel crossing to support salt making and harvesting operations.		
142	Perimeter berm	General berm maintenance	TBD	2a	2a	4,700 lf	Build up the inboard perimeter berm with land based equipment.		
						19,000 cy			
143	Perimeter berm	Other work	Ongoing	N/A[3]	N/A[3]	4,200 lf	New work – Replace high voltage power poles like in kind.		

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Cargill Berm Maintenance Completion Map

Fiscal Year 2018-2019

Comments:

1. Berm Maintenance markers are not drawn to scale.
2. Activities of Grading, Discing, and Graveling are not shown.

APPENDIX C Cargill Specifications for Acceptable Riprap and Clean Material

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Cargill

RIP RAP DELIVERIES AT CARGILL NEWARK

Open For Deliveries: 7AM to 11AM - Monday through Friday only.
(Closed during inclement weather)
Call 510-790-8167 prior to deliver to confirm if we are accepting rip rap.

The following rules are in place to assure your **SAFETY**,
and that of our employees, contractors and associates.

Delivery Requirements:

1) **NO HAND (MANUAL) UNLOADING!** ONLY AUTOMATED DUMP TRUCKS ALLOWED, NO LARGER THAN A **10 WHEELER**. **NO TARPS ALLOWED.** Other heavy equipment and machinery use the **ONE LANE** roads to final disposal destination. Therefore, we may **REQUIRE** that Cargill personnel **ESCORT** you to and from the unloading site.

   Any vehicle traveling without an escort when required will be in serious violation of our **SAFETY REGULATIONS**, and will be immediately escorted out and disposal privileges terminated.

2) Deliver through Solar Gate at end of Morton Avenue. Use keypad on the left to obtain entry. [Press the # key for dial tone, then press **01** (if no one available, press 02, or 03, or 04, or 05), inform via speaker that you are here to deliver Rip Rap].

   Park under the mirror located on the building opposite the office.

3) **Check in at Office**. Sign IN and OUT (name, license plate number and phone number)

   Wait in truck for Cargill Escort, if necessary

4) **People are not allowed in truck beds or over 4 ft. off the ground**

5) **Personal Protective Equipment** required when outside of your vehicle:

   Hardhat, steel toe shoes, gloves, and safety glasses with side shields

6) No use of Cell Phones when vehicle is in motion

7) **SPEED LIMIT: Obey as posted. Never exceed 25 MPH**
   Do not travel faster than weather and road conditions allow. Always drive defensively.
   Obey all traffic signs.

8) Yield to oncoming traffic on One Lane Roads

9) Unload only at designated area.

RIP RAP Specifications

CONCRETE ONLY with no exposed rebar. Rebar must be CUT flush to concrete.

SIZE:	Maximum:	3’ W x 3’ L x 18” thick.
	Minimum:	1’ W x 1’ L x 3” thick.

NO bricks, stepping-stones, asphalt, garbage, or rubbish of any type.

Any violations will result in termination of disposal privilege.

<u>WORKING WITH TOTAL SAFETY IS YOUR MOST IMPORTANT RESPONSIBILITY</u>

Rip Rap Contractor Agreement: Waiver and Release

Cargill, Incorporated ("Cargill") has granted me permission to visit Cargill's plant and premises (the "Facility"). In return:

1. I acknowledge that visiting the Facility may present certain dangers and substantial risk to me, my clothing and my property. I knowingly and voluntarily assume all risks associated with visiting the Facility. I waive express notice of any hazardous condition(s) which may exist in, upon, or about the Facility, and assume all risks associated with the same.
2. I hereby waive all claims for damages for loss of or injury to life, person, or property, which may be sustained by me during or as a result of my visit. This waiver shall be effective for me and for my heirs and executors.
3. I agree to abide by all safety and other instructions provided by Cargill employees and representatives.
4. I agree to not disclose to others, nor to use without the express written permission of Cargill, any Confidential Information disclosed to me or derived from or as a result of my visit(s) to the Facility, subject to the following:
    (a) "Confidential Information" means all information and data relating to Cargill or the Facility and its operations, including but not limited to technical process, product, equipment, production, operational information and third party confidential information whether in written or other tangible form, or disclosed orally or otherwise derived from observations at the Facility and its operations, including but not limited to technical process, product, equipment, Facility.
    (b) Confidential Information does not include information which (i) is in the public domain prior to the disclosure to me; (ii) is lawfully in my possession as evidenced by written records prior to disclosure to me by Cargill, or (iii) becomes part of the public domain through no unauthorized act or omission on my part.
5. I agree to follow all safety rules, regulations and evacuation policies. If I am not aware of such policy, I will make it my responsibility to ask, prior to working or visiting the Facility.

I understand that Cargill would not grant me permission to visit the Facility, other than on the terms and conditions set forth above.

After reading the above carefully, I fully understand and agree to each term of this agreement and the rip rap meets all Cargill Specs noted on the reverse as well as:

- The riprap does not contain or is contaminated in any way with any hazardous Waste, hazardous substances, asbestos contamination or toxic substance.
- If any riprap I deliver to the Facility does not meet the specifications, I agree, immediately upon receiving notice from Cargill of the nonconformance, either to remove the riprap from the Facility or clean up the riprap so that it meets the Cargill specifications. I agree to remove or clean up the riprap at my own expense and with your own equipment.
- In the event I need to enter the Facility to remove or clean up riprap that does not meet Cargill Specifications, I agree to defend, indemnify, and hold harmless Cargill from any loss, liability, damage and expense (including reasonable attorneys' fees) from any claim against Cargill, resulting from my presence at the Facility.

Name______________________________________ **Company** ____

Date ___________________ **Time In** ___________________ **Time Out** _________________________

License Plate # ___________________ Phone# _________________________

Where is the concrete coming from (include kind of industrial, commercial or residential activity(s)? ____

Thank you, Cargill Solar 510-790-8167

Cargill Clean Import Material Request Form

This request is for a Company, Contractor and/or Consultant (Requestor) to deliver clean import material (soil) to Cargill soil stockpile(s).

1. The Requestor is required to perform the appropriate level of assessment and/or characterization of the import material to perform the required analytical testing (listed below), appropriate samples, sampling methods and protocols, which may include additional analytical testing per site conditions. Cargill does not accept treated soils (such as Calcium or Lime).

2. The import material must be free of debris, trash and other foreign materials. Any debris, trash and/or other materials must be immediately removed, paid by and properly disposed of by the Requestor. Cargill may stop or cancel the job if conditions are not met.

3. If any import material is found not to meet Cargill specifications, the Requestor shall immediately notify Cargill. In the event delivered import material does not meet Cargill specifications, the Requestor shall remove and/or clean import soil at the Requestors expense.

4. The Requestor is responsible for all Best Management Practices ("BMP's") to protect the Environment, including (and not limited to): rules, regulations and other requirements. All BMP's must be maintained at all times.

    a. No tracking of soil onto public or private roadways
    b. Properly maintained equipment
    c. Appropriate Sweeping, Vacuuming, Storm Drain Inlet Protection, Rumble Plates, etc.
    d. Other Appropriate BMP's

5. Testing Requirements: The Requestor shall agree to perform and submit analytical results from an ELAP Certified Laboratory (with approved EPA Methods), at the Requestor's expense. Analytical will be reviewed, approved or denied. Import material shall not be delivered until approved and accepted. Additional testing may be required by Cargill.

    a. Organochlorine Pesticides and PCB's
    b. Volatile Organic Compounds
    c. Total Petroleum Hydrocarbons as Gasoline and Diesel
    d. Total Oil and Grease
    e. Benzene, Toluene, Ethyl Benzene, and Xylene
    f. California Metals: As, Ba, Be, Ce, Cr, Co, Cu, F, Pb, Hg, Mo, Ni, Se, Ti, Vn, Zn
    g. Asbestos

6. Source/ of Import Material

    h. Request Volume (yards): ______________________________

    i. Street Address: ______________________________

    j. City: ______________________________

    k. Property Owner: ______________________________

l. Current Property Use: ________________________________

____

m. Previous Property Use(s):______________________________

____

____

____

7. Cargill has the right to stop work and/or cancel the import material at any time without any of the Requestors costs or expenses.

8. The Requestor agrees to defend, indemnify, additional insure, hold Cargill harmless from any loss, liability, damages and expense (including reasonable attorney's fees), from any claims against Cargill resulting from all import material activities.

By signing this Request, you agree to the following terms and conditions regarding the delivery of import material (soil).

Name: ______________________________Signature: ____________________

Company: __________________________Date: _________________________

Company Title: _____________________Email/Phone: __________________

Additional Comments / Notes: ____________________

____

____

____

____

APPENDIX D Summary of Applicable Federal and State Regulations

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Table D-1. Federal (U.S.) and State (CA) Laws, Regulations, and Policies Potentially Applicable to the Project

Relevant Section	Jurisdiction	Regulation	Summary
3.3 Air Quality	US	Federal Clean Air Act (FCAA) (42 USC 7401 et seq.)	The FCAA requires the U.S. Environmental Protection Agency (USEPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards are established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). In 2007, the U.S. Supreme Court ruled that carbon dioxide (CO_2) is an air pollutant as defined under the FCAA, and that the USEPA has authority to regulate GHG emissions. Pursuant to the 1990 FCAA Amendments, USEPA classifies air basins (or portions thereof) as in "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS are achieved. The classification is determined by comparing monitoring data with State and Federal standards. • An area is classified as in "attainment" for a pollutant if the pollutant concentration is lower than the standard. An area is classified as in "nonattainment" for a pollutant if the pollutant concentration exceeds the standard. • An area is designated "unclassified" for a pollutant if there are not enough data available for comparisons.
3.3 Air Quality	CA	California Clean Air Act of 1988 (CCAA) (Assembly Bill [AB] 2595)	The CCAA requires all air districts in the State to endeavor to achieve and maintain State ambient air quality standards for O_3, CO, SO_2, NO_2, and PM; attainment plans for areas that did not demonstrate attainment of State standards until after 1997 must specify emission reduction strategies and meet milestones to implement emission controls and achieve more healthful air quality. California's ambient air standards are generally stricter than national standards for the same pollutants; the State has also established standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. The 1992 CCAA Amendments divide O_3 nonattainment areas into four categories of pollutant levels (moderate, serious, severe, and extreme) to which progressively more stringent requirements apply.
3.3 Air Quality	CA	California Global Warming Solutions Act of 2006 (AB 32) , as amended by SB 32 (2016)	Under Assembly Bill [AB] 32, CARB is responsible for monitoring and reducing GHG emissions in the State and for establishing a statewide GHG emissions cap for 2020 that is based on 1990 emissions levels. CARB (2009) has adopted the AB 32 Climate Change Scoping Plan (Scoping Plan), which contains the main strategies for California to implement to reach the 2020 and 2050 emission goals. The Scoping Plan breaks down the amount of GHG emissions reductions the CARB recommends for each emissions sector of the State's GHG inventory, but does not directly discuss GHG emissions generated by construction activities. The First Update to the Scoping Plan was approved by CARB on May 22, 2014 and focuses on energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and the cap- and-trade program. In 2016, the Senate Bill 32 amended AB 32 to set a target of reducing emissions to 40% below 1990 levels by 2030.

Relevant Section	Jurisdiction	Regulation	Summary
3.3 Air Quality	CA	Senate Bill (SB) 97 and 375	Pursuant to SB 97, the State Office of Planning and Research prepared and the Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Effective as of March 2010, the revisions to the CEQA Environmental Checklist Form (Appendix G) and the Energy Conservation Appendix (Appendix F) provide a framework to address global climate change impacts in the CEQA process; State CEQA Guidelines section 15064.4 was also added to provide an approach to assessing impacts from GHGs.
3.3 Air Quality	CA	Assembly Bill 1493	AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks beginning with the 2009 model year.
3.3 Air Quality	CA	Executive Orders (EOs)	• Under EO S-01-07, which set forth a low carbon fuel standard for California, the carbon intensity of California's transportations fuels is to be reduced by at least 10 percent by 2020. • EO S-3-05 established statewide GHG emission targets of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below the 1990 level by 2050. • Executive Order B16-12 provides a target of reducing GHG emissions from the transportation sector by 80 percent below 1990 emissions levels for the transportation sector by 2050. • Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."
3.3 Air Quality	CA	Other	• Under California's Diesel Fuel Regulations, diesel fuel used in motor vehicles, except harbor craft, has been limited to 500 parts per million (ppm) sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning September 1, 2006, and harbor craft were included starting in 2009. • CARB's Heavy Duty Diesel Truck Idling Rule (13 CCR § 2485) prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time. Truck idling for longer than 5 minutes while queuing is allowed, however, provided the queue is located beyond 100 feet (30 meters) from any homes or schools. • The Statewide Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines/engine-driven equipment units. Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	U.S.	Endangered Species Act (FESA) (7 USC 136, 16 USC 1531 et seq.)	The FESA provides guidance for the conservation of species designated as Endangered and Threatened and their habitats. When applicants are proposing projects with a Federal nexus that "may affect" a federally listed or proposed species, the Federal agency is required to consult with the USFWS or NMFS, as appropriate, under Section 7. Section 7 provides that each Federal agency must ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species listed under the FESA or result in the destruction or adverse modification of areas determined to be critical habitat. USFWS and/or NMFS issue Biological Opinions summarizing findings for activities that could affect a listed species. Section 9 prohibits the "take" of any member of a listed species. • Take is defined as "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." • Harass is "an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering." • Harm is defined as "...significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering."
3.4 Biology	U.S.	Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.)	The MSA is the primary law governing marine fisheries management in U.S. Federal waters. The MSA was first enacted in 1976 and amended in 1996. Amendments to the 1996 MSA require the identification of Essential Fish Habitat (EFH) for federally managed species and the implementation of measures to conserve and enhance this habitat. The MSA requires Federal agencies to consult with the NMFS regarding actions that may affect EFH for Pacific coast groundfish, coastal pelagic species, and Pacific salmon. The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is the habitat (waters and substrate) required to support a sustainable fishery and a managed species' contribution to a healthy ecosystem. Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities. Any project requiring Federal authorization, such as a USACE permit, is required to complete and submit an EFH Assessment with the application and either show that no significant impacts to the essential habitat of managed species are expected or identify mitigations to reduce those impacts. Under the MSA, Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1802(10)). Pursuant to section 305(b)(2), Federal agencies shall consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	U.S.	Marine Mammal Protection Act (16 USC 1361–1407)	The purpose of this act is to conserve marine mammals. With certain exceptions, the act prohibits the taking and importation of marine mammals as well as products from them. The act also prohibits harassment of marine mammals; it applies to harbor seals that use the Project area.
3.4 Biology	U.S.	Other	• The Bald and Golden Eagle Protection Act makes it illegal to import, export, take (including molest or disturb), sell, purchase or barter any bald eagle or golden eagle or parts thereof. • Clean Water Act (33 USC 1251 et seq.) (3.3.8, Hydrology and Water Quality) • Executive Order 13112 requires Federal agencies to use authorities to prevent introduction of invasive species, respond to and control invasions in a cost-effective and environmentally sound manner, and to provide for restoration of native species and habitat conditions in ecosystems that have been invaded. • Rivers and Harbors Act (33 USC 401) (3.3.8, Hydrology and Water Quality)
3.4 Biology	U.S.	Executive Order 11990: Protection of Wetlands (May 24, 1977)	Established a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative.
3.4 Biology	CA	California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)	CESA provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the California Department of Fish and Wildlife (CDFW), and prohibits the taking of such species without its authorization. Furthermore, CESA provides protection for those species that are designated as candidates for threatened or endangered listings. Under CESA, CDFW has the responsibility for maintaining a list of threatened species and endangered species (Fish & G. Code, § 2070). CDFW also maintains a list of candidate species, which are species that CDFW has formally noticed as under review for addition to the threatened or endangered species lists. CDFW also maintains lists of Species of Special Concern that serve as watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project site and determine whether the proposed project will capture, injure or kill such species. In addition, CDFW encourages informal consultation on any proposed project that may affect a candidate species.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	CA	California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)	CESA regulates the "take" of a species listed as Threatened or Endangered under the State act. CESA requires a permit to take a State-listed species through incidental or otherwise lawful activities (§ 2081, subd. (b)). If take of a California listed species may occur, CDFW would require a Fish and Game Code Section 2081 Incidental Take Permit (ITP). An ITP requires that impacts by minimized and fully mitigated in addition to a determination that the species would not be jeopardized by the issuance of the permit. CESA does not require formal consultation; however, CESA does require that the CDFW act as a reviewing agency for all CEQA documents if the fish and wildlife resources of the State may be affected by the proposed action.
3.4 Biology	CA	Other relevant California Fish and Game Code sections	• The California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.) is intended to preserve, protect, and enhance endangered or rare native plants in California. This Act includes provisions that prohibit the taking of listed rare or endangered plants from the wild and a salvage requirement for landowners. The Act directs the CDFW to establish criteria for determining what native plants are rare or endangered. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered. • The California Species Preservation Act (Fish & G. Code §§ 900-903) provides for the protection and enhancement of the amphibians, birds, fish, mammals, and reptiles of California. • Fish and Game Code sections 3503 & 3503.5 prohibit the taking and possession of native birds' nests and eggs from all forms of needless take. These regulations also provide that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nests or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto. • Fish and Game Code sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), & 5515 (fish) designate certain species as "fully protected." Fully protected species, or parts thereof, may not be taken or possessed at any time without permission by the CDFW.
3.4 Biology	CA	California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.)	This Act is intended to preserve, protect, and enhance endangered or rare native plants in California. This Act includes provisions that prohibit the taking of listed rare or endangered plants from the wild and a salvage requirement for landowners. The Act directs the CDFW to establish criteria for determining what native plants are rare or endangered. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered.

Relevant Section	Jurisdiction	Regulation	Summary
3.4 Biology	CA	California Fish and Game Code: Stream Alteration (Fish and Game Code Sections 1601–1603)	State and local agencies are required to notify the CDFW prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, the CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.
3.4 Biology	CA	California Fish and Game Code: Fully Protected Species (Fish and Game Code Sections 3511, 4700, 5050, and 5515)	This is the State's effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take. Exceptions are allowed for collecting these species for necessary scientific research and relocating bird species for the protection of livestock. Many fully protected species are also listed under the FESA and/or the CESA.
3.4 Biology	CA	Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) (Porter-Cologne)	Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs which have primary responsibility for protecting State water quality and the beneficial uses of State waters. Under Porter-Cologne, waters of the State are assigned beneficial uses. Several of the beneficial uses support biological resources, including the following beneficial uses: estuarine habitat; fish migration, fish spawning, preservation of rare and endangered species, cold freshwater habitat, wildlife habitat, and warm freshwater habitat.
3.5 Cultural Resources	U.S.	Archaeological Resources Protection Act (ARPA)	The ARPA states that archaeological resources on public lands and Indian lands are an accessible and irreplaceable part of the nation's heritage and: • Establishes protection for archaeological resources to prevent loss and destruction due to uncontrolled excavations and pillaging; • Encourages increased cooperation and exchange of information between government authorities, the professional archaeological community, and private individuals having collections of archaeological resources prior to the enactment of this Act; • Establishes permit procedures to permit excavation or removal of archaeological resources (and associated activities) located on public or Indian land; and • Defines excavation, removal, damage, or other alteration or defacing of archaeological resources as a "prohibited act" and provides for criminal and monetary rewards to be paid to individuals furnishing information leading to the finding of a civil violation or conviction of a criminal violator. ARPA has both enforcement and permitting components. The enforcement provision provides for the imposition of both criminal and civil penalties against violators of the Act. The ARPA's permitting

Relevant Section	Jurisdiction	Regulation	Summary
			component allows for recovery of certain artifacts consistent with the standards and requirements of the National Park Service (NPS) Federal Archeology Program.
3.5 Cultural Resources	U.S.	National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	This applies only to Federal undertakings, which is a project, activity, or program either funded, permitted, licensed, or approved by a Federal Agency. Archaeological resources are protected through the NHPA, as amended, and it's implementing regulation, Protection of Historic Properties (36 CFR 800), the AHPA, and the ARPA. This Act presents a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations by directing Federal agencies to assume responsibility for considering the historic resources in their activities. The State implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation (OHP), within the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level and advises Federal agencies regarding potential effects on historic properties. The OHP also administers and coordinates the California Historic Resources Information System Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions, including commenting on Federal undertakings.
3.5 Cultural Resources	U.S.	Federal Antiquities Act of 1906	Paleontological resources were first protected under the Federal Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225). This statute calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands.
3.5 Cultural Resources	CA	California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.)	As the CEQA lead agency, BCDC is responsible for complying with the requirements of CEQA that relate to archaeological and historical resources (CEQA Guidelines Section 15064.5) A historical resource includes: (1) a resource listed in, or eligible for listing in, the California Register of Historic Resources (CRHR); (2) a resource included in a local register of historical or identified as significant in an historical resource surveys; and (3) any resource that a lead agency determines to be historically significant for the purposes of CEQA, when supported by substantial evidence in light of the whole record. The CRHR was created to identify resources deemed worthy of preservation on a State level and was modeled closely after the National Register. The criteria, which are nearly identical to those of the National Register but focus on resources of statewide significance (State CEQA Guidelines § 15064.5, subd. (a)(3)), are defined as any resource that meets any of the following criteria: (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (2) Is associated with lives of persons important in our past; (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (4) Has yielded, or may be likely to yield, information important in prehistory or history. Properties listed, or formally designated as eligible for listing, on the National Register are automatically listed on the CRHR, as are certain State Landmarks and Points of Interest. The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, not included in a local register of historical

Relevant Section	Jurisdiction	Regulation	Summary
			resources, or identified in an appropriately completed survey, does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code (PRC) sections 5020.1, subdivision (j), or 5024.1 (State CEQA Guidelines § 15064.5, subd. (a)(4)). CEQA also applies to effects on archaeological sites, per Guidelines Section 15064.5(c).
3.5 Cultural Resources	CA	Health and Safety Code § 7050.5	This code states that if human remains are exposed during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC section 5097.998. The Coroner has 24 hours to notify the Native American Heritage Commission (NAHC) if the remains are determined to be of Native American descent. The NAHC will contact most likely descendants, who may recommend how to proceed.
3.6 Geology and Soils	U.S.	None applicable.	--
3.6 Geology and Soils	CA	Alquist-Priolo Earth-quake Fault Zoning Act (Pub. Resources Code, §§ 2621-2630)	This Act requires that "sufficiently active" and "well-defined" earthquake fault zones be delineated by the State Geologist and prohibits locating structures for human occupancy across the trace of an active fault.
3.6 Geology and Soils	CA	California Building Code (CBC) (CCR, Title 23)	The CBC contains requirements related to excavation, grading, and construction of pipelines alongside existing structures. A grading permit is required if more than 50 cubic yards of soil are moved. Sections 3301.2 and 3301.3 contain provisions requiring protection of the adjacent property during excavations and require a 10-day written notice and access agreements with the adjacent property owners.
3.7 Greenhouse Gas Emissions (Refer to the Air Quality and Transportation sections)	Not applicable	Not applicable	Not applicable
3.8 Hazards and Hazardous Materials	U.S.	Clean Water Act (CWA) (33 USC 1251 et seq.)	The CWA is comprehensive legislation (it generally includes reference to the Federal Water Pollution Control Act of 1972, its supplementation by the CWA of 1977, and amendments in 1981, 1987, and 1993) that seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S.

Relevant Section	Jurisdiction	Regulation	Summary
3.8 Hazards and Hazardous Materials	U.S.	California Toxics Rule (40 CFR 131)	In 2000, the USEPA promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions to be applied to waters in the State of California. USEPA promulgated this rule based on the Administrator's determination that the numeric criteria are necessary in the State of California to protect human health and the environment. (Under CWA section 303(c)(2)(B), the USEPA requires states to adopt numeric water quality criteria for priority toxic pollutants for which the USEPA has issued criteria guidance, and the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.) These Federal criteria are legally applicable in California for inland surface waters, enclosed bays, and estuaries.
3.8 Hazards and Hazardous Materials	U.S.	Hazardous Materials Transportation Act (HMTA) (49 USC 5901)	The HMTA delegates authority to the United States Department of Transportation (DOT) to develop and implement regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. Additionally, the USEPA’s Hazardous Waste Manifest System is a set of forms, reports, and procedures for tracking hazardous waste from a generator’s site to the disposal site. Applicable Federal regulations are contained primarily in CFR Titles 40 and 49.
3.8 Hazards and Hazardous Materials	U.S.	National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300)	Authorized under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99 through 499; and by CWA section 311(d), as amended by the Oil Pollution Act of 1990 (OPA), Pub. L. 101 through 380. The NCP outlines requirements for responding to both oil spills and releases of hazardous substances. It specifies compliance, but does not require the preparation of a written plan. It also provides a comprehensive system for reporting, spill containment, and cleanup. The United States Coast Guard (USCG) and USEPA co-chair the National Response Team. In accordance with 40 CFR 300.175, the USCG has responsibility for oversight of regional response for oil spills in “coastal zones,” as described in 40 CFR 300.120.
3.8 Hazards and Hazardous Materials	U.S.	Oil Pollution Act (OPA) (33 USC 2712)	The OPA requires owners and operators of facilities that could cause substantial harm to the environment to prepare and submit plans for responding to worst-case discharges of oil and hazardous substances. The passage of the OPA motivated California to pass a more stringent spill response and recovery regulation and the creation of the Office of Spill Prevention and Response (OSPR) to review and regulate oil spill plans and contracts.
3.8 Hazards and Hazardous Materials	U.S.	Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)	The RCRA authorizes the USEPA to control hazardous waste from “cradle-to-grave,” which encompasses its generation, transportation, treatment, storage, and disposal. RCRA’s Federal Hazardous and Solid Waste Amendments from 1984 include waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. The Department of Toxic Substances Control (DTSC) is the lead State agency for corrective action associated with RCRA facility investigations and remediation.

Relevant Section	Jurisdiction	Regulation	Summary
3.8 Hazards and Hazardous Materials	U.S.	Other	• Rivers and Harbors Act (33 USC 401)
3.8 Hazards and Hazardous Materials	CA	Other	• California Seismic Hazards Mapping Act (Pub. Resources Code, § 2690) and Seismic Hazards Mapping Regulations (CCR Title 14, Div. 2, Ch. 8, Art. 10) • The Hazardous Waste Control Act (CCR, Title 26) defines requirements for proper management of hazardous materials. • Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13000 et seq.)
3.9 Hydrology and Water Quality	U.S.	Clean Water Act (CWA) (33 USC 1251 et seq.)	The CWA is a comprehensive piece of legislation that generally includes reference to the Federal Water Pollution Control Act of 1972, and its substantial supplementation by the CWA of 1977. Both Acts were subsequently amended in 1981, 1987, and 1993. Overall, the CWA seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S. These water quality standards are promulgated by the USEPA and enforced in California by the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). CWA sections include: Water Quality Control Boards (RWQCBs). CWA sections include: • State Water Quality Certification. Section 401 (33 USC 1341) requires certification from the State or interstate water control agencies that a proposed water resources project is in compliance with established effluent limitations and water quality standards. U. S. Army Corps of Engineers (USACE) projects, as well as applicants for Federal permits or licenses are required to obtain this certification. • National Pollution Discharge Elimination System (NPDES). Section 402 (33 USC 1342) establishes conditions and permitting for discharges of pollutants under the NPDES.
3.9 Hydrology and Water Quality	U.S.	Rivers and Harbors Act (33 USC 401)	This Act governs specified activities in "navigable waters" (waters 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). Specifically, it limits the construction of structures and the discharge of fill into navigable waters of the U.S. Under section 14 of the Rivers and Harbors Act, the Secretary of the Army on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier or other work built by the United States. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.

Relevant Section	Jurisdiction	Regulation	Summary
3.9 Hydrology and Water Quality	CA	Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) (Porter-Cologne)	Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs which have primary responsibility for protecting State water quality and the beneficial uses of State waters. Porter-Cologne also implements many provisions of the Federal CWA, such as the National Pollutant Discharge Elimination System (NPDES) permitting program. Pursuant to the CWA § 401, applicants for a Federal license or permit for activities that may result in any discharge to waters of the U. S. must seek a Water Quality Certification (Certification) from the State in which the discharge originates. Such Certification is based on a finding that the discharge will meet water quality standards and other appropriate requirements of State law. In California, RWQCBs issue or deny certification for discharges within their jurisdiction. The SWRCB has this responsibility where projects or activities affect waters in more than one RWQCB's jurisdiction. If the SWRCB or a RWQCB imposes a condition on its Certification, those conditions must be included in the Federal permit or license. Statewide Water Quality Control Plans include: individual RWQCB Basin Plans; the California Ocean Plan; the San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Bay-Delta Plan); the Water Quality Control Plan for Enclosed Bays and Estuaries of California; and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). These Plans contain enforceable standards for the various waters they address. For example: • Basin Plan. Porter-Cologne (§ 13240) requires each RWQCB to formulate and adopt a Basin Plan for all areas within the Region. Each RWQCB must establish water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives within the basin plans. 40 CFR 131 requires each State to adopt water quality standards by designating water uses to be protected and adopting water quality criteria that protect the designated uses. In California, the beneficial uses and water quality objectives are the State's water quality standards.
3.10 Noise	U.S.	Noise Control Act (42 USC 4910)	Required the USEPA to establish noise emission criteria, as well as noise testing methods (40 CFR Chapter 1, Subpart Q). These criteria generally apply to interstate rail carriers and to some types of construction and transportation equipment. The USEPA published a guideline (USEPA 1974) containing recommendations for acceptable noise level limits affecting residential land use of 55 dBA L_{dn} for outdoors and 45 dBA L_{dn} for indoors.

Relevant Section	Jurisdiction	Regulation	Summary
3.10 Noise	U.S.	Department of Housing and Urban Development Environmental Standards (24 CFR Part 51)	Sets forth the following exterior noise standards for new home construction (for interior noise levels, a goal of 45 dBA is set forth and attenuation requirements are geared to achieve that goal): ○ 65 L_{dn} or less – Acceptable ○ 65 L_{dn} and < 75 L_{dn} – Normally unacceptable, appropriate sound attenuation measures must be provided ○ > 75 L_{dn} – Unacceptable
3.10 Noise	U.S.	NTIS 550\9-74-004, 1974 ("Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety").	In response to a Federal mandate, the USEPA provided guidance in this document, commonly referenced as the, "Levels Document," that establishes an L_{dn} of 55 dBA as the requisite level, with an adequate margin of safety, for areas of outdoor uses including residences and recreation areas. The USEPA recommendations contain a factor of safety and do not consider technical or economic feasibility (i.e., the document identifies safe levels of environmental noise exposure without consideration for achieving these levels or other potentially relevant considerations), and therefore should not be construed as standards or regulations.
3.10 Noise	CA	None applicable.	--
3.11 Transportation	U.S.	None applicable.	--
3.11 Transportation	CA	SB 743 (Public Resources Code Section 21099(b)(1)	Senate Bill 743 was codified in PRC section 21099. It required changes to the guidelines implementing CEQA (CEQA Guidelines) (CCR, Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."
3.11 Transportation	CA	SB 391	Senate Bill 391 requires the California Transportation Plan to support 80 percent reduction in GHGs below 1990 levels by 2050.
3.11 Transportation	CA	Executive Orders	• Executive Order B-16-12 (2012) specifies a GHG emissions reduction target of 80 percent below 1990 levels by 2050 specifically for transportation. • Executive Order B-55-18 (2018) established an additional statewide goal of achieving carbon neutrality as soon as possible, but no later than 2045, and maintaining net negative emissions thereafter. It states, "The California Air Resources Board shall work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal."

Relevant Section	Jurisdiction	Regulation	Summary
3.11 Transportation	CA	California Vehicle Code	Chapter 2, Article 3 of the Vehicle Code defines the powers and duties of the California Highway Patrol, which has enforcement responsibilities for the vehicle operation and highway use in the State.
3.11 Transportation	CA	Other	• The California Air Resources Board Mobile Source Strategy (2016) describes California's strategy for containing air pollutant emissions from vehicles, and quantifies VMT growth compatible with achieving state targets. • The California Air Resources Board's 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 Greenhouse Gas Target describes California's strategy for containing GHG emissions from vehicles, and quantifies VMT growth compatible with achieving state targets.
3.12 Tribal Cultural Resources	CA	California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.)	AB 52 established a formal consultation process for California Native American tribes as part of the CEQA process and equated significant impacts on "tribal cultural resources" with significant environmental impacts (PRC Section 21084.2). A Tribal Cultural Resource is a site feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe and is either on or eligible for the CRHR or a local historic register, or one such resources that the lead agency chooses to treat as a Tribal Cultural Resource.
3.12 Tribal Cultural Resources	CA	Public Resources Code Sections 21080.3.1 and 21084.2	PRC section 21084.2 states that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." To help determine whether a project may have such an effect, the PRC requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. PRC Section 21080.3.1 states "…Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources that may inform the lead agency in its identification and determination of the significance of tribal cultural resources" and therefore establishes the following requirements for consultation. • "Prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project, the lead agency shall begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if: (1) The California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and (2) The California Native American tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation." • Section 21074 of the PRC defines "tribal cultural resources" as either "(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that are listed, or

Relevant Section	Jurisdiction	Regulation	Summary
			determined to be eligible for listing, in the national or state register of historical resources, or listed in a local register of historic resources; or (2) a resource that the lead agency determines, in its discretion, is a tribal cultural resource."
3.13 Utilities and Service Systems	None Applicable	None Applicable	None Applicable

Abbreviations used in this table:

AB = Assembly Bill

BCDC = Bay Conservation and Development Commission

CARB = California Air Resources Board

CDFW = California Department of Fish and Wildlife

CEQA = California Environmental Quality Act

CFR = Code of Federal Regulations

CWA = Clean Water Act

EO = Executive Order

NMFS = National Marine Fisheries Service

RWQCB = Regional Water Quality Control Board

SB = Senate Bill

SWRCB = State Water Resources Control Board

USACE = U.S. Army Corps of Engineers

USC = U.S. Code

USEPA = U.S. Environmental Protection Agency

USFWS = U.S. Fish and Wildlife Service

APPENDIX E Special-Status Species Tables

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Appendix E Special-Status Species Tables

The special-status species tables have been divided into plants (Table E-1) and wildlife (Table E-2). Section 3.4.2.1 of the Environmental Assessment provides a discussion on the how the likelihood of occurrence was determined.

Table E-1. Special-Status Plant Species Identified in Records Searches

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Acanthomintha duttonii	San Mateo thorn-mint	E	E	1B.1	Chaparral and valley and foothill grasslands. Grows in serpentine soils.	April to June	**Absent.** No suitable habitat is present within the Biological Study Area (BSA).
Allium peninsulare var. *franciscanum*	Franciscan onion	--	--	1B.2	Cismontane woodland, valley and foothill grassland. Grows in volcanic and serpentine soils.	May to June	**Absent.** No suitable habitat is present within the BSA.
Amsinckia lunaris	bent-flowered fiddleneck	--	--	1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. Grows in the San Francisco Bay Area and the woods of the coastal and inland mountains just north.	March to June	**Absent.** No suitable habitat is present within the BSA.
Androsace elongata ssp. *acuta*	California androsace	--	--	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland.	March to June	**Absent.** No suitable habitat is present within the BSA.
Arctostaphylos regismontana	Kings Mountain manzanita	--	--	1B.2	Broadleafed upland forest, chaparral, and North Coast coniferous forest. Grows in granitic or sandstone soils.	December to April	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Astragalus tener var. *tener*	alkali milk-vetch	--	--	1B.2	Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-170 m.	March to June	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Atriplex depressa	brittlescale	--	--	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Grows in alkaline, clay soils.	April to October	**Potential to occur.** Playa habitat is present within the BSA. One CNDDB occurrence within 2 miles of the BSA.
Atriplex minuscula	lesser saltscale	--	--	1B.1	Chenopod scrub, playas, and valley and foothill grassland. Grows in alkaline, sandy soils.	May to October	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Calandrinia breweri	Brewer's calandrinia	--	--	4.2	Chaparral and coastal scrub. Grows in sandy or loamy, disturbed sites and burns.	(January) March to June	**Absent.** No suitable habitat is present within the BSA.
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	--	--	1B.1	Valley and foothill grassland. Grows in alkaline soils.	May to October (November)	**Potential to occur.** There is potentially suitable habitat within the external areas on the outboard side of outboard berms where maintenance or access work infrequently occur.
Chloropyron maritimum ssp. *palustre*	Point Reyes bird's-beak	--	--	1B.2	Coastal salt marsh.	July to October	**Unlikely to occur.** There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Chorizanthe robusta	robust spineflower	E	--	1B.1	Chaparral (maritime), cismontane woodland (openings), coastal dunes, and coastal scrub. Grows in sandy or gravelly soils.	April to September	**Absent.** No suitable habitat is present within the BSA.
Cirsium fontinales var. *fontinale*	Crystal Springs fountain thistle	E	E	1B.1	Chaparral (openings), cismontane woodland, meadows and seeps, and valley and foothill grassland. Grows in serpentine seeps.	(April) May to October	**Absent.** No suitable habitat is present within the BSA.
Cirsium praeteriens	lost thistle	--	--	1A	Known only from Santa Clara County, where it was collected it in Palo Alto in 1897 and 1901. It is presumed extinct.	June to July	**Absent.** Presumed extirpated in California.
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	--	--	4.3	Chaparral and cismontane woodland.	(April) May to June (July)	**Absent.** No suitable habitat is present within the BSA.
Collinsia corymbosa	round-headed Chinese-houses	--	--	1B.2	Coastal dunes.	April to June	**Absent.** No suitable habitat is present within the BSA.
Collinsia multicolor	San Francisco collinsia	--	--	1B.2	Closed-cone coniferous forest and coastal scrub. Often grows in serpentine soils.	(February) March to May	**Absent.** No suitable habitat is present within the BSA.
Dirca occidentalis	western leatherwood	--	--	1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. Grows in mesic soils.	January to March (April)	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Eryngium aristulatum var. *hooveri*	Hoover's button-celery	--	--	1B.1	Vernal pools. Grows in mesic soils.	(June) July (August)	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Eryngium jepsonii	Jepson's coyote thistle	--	--	1B.2	Valley and foothill grassland and vernal pools.	April to August	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Extriplex joaquinana	San Joaquin spearscale	--	--	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Grows in alkaline soils.	April to October	**Potential to occur.** Playa habitat is present within the BSA. Two CNDDB occurrences within 2 miles of the BSA.
Fritillaria liliacea	fragrant fritillary	--	--	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Grows in serpentinite soils. Ranges over parts of southwestern Northern California, USA, especially Solano and Sonoma Counties and at coastal locations south to Monterey County.	February to April	**Absent.** No suitable habitat is present within the BSA.
Hesperolinon congestum	Marin western flax	T	T	1B.1	Chaparral, valley and foothill grassland. Grows in serpentinite soils, especially in dry native bunch grasses. Known to occur only in San Mateo, San Francisco and Marin County, California, USA.	April to July	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Lasthenia conjugens	Contra Costa goldfields	E	-	1B.1	Vernal pools and mesic soils within cismontane woodland, playas (alkaline), and valley and foothill grassland.	March to June	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Lessingia hololeuca	woolly-headed lessingia	--	--	3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland. Grows in clay and serpentine soils.	June to October	**Absent.** No suitable habitat is present within the BSA.
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	--	--	1B.2	Marshes and swamps (freshwater and brackish). Grows in mesic soils.	May to July (August to September)	**Unlikely to occur**. There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Malacothamnus arcuatus	arcuate bush-mallow	--	--	1B.2	Chaparral and cismontane woodland.	April to September	**Absent.** No suitable habitat is present within the BSA.
Malacothamnus davidsonii	Davidson's bush-mallow	--	--	1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland.	June to January	**Absent.** No suitable habitat is present within the BSA.
Malacothamnus hallii	Hall's bush-mallow	--	--	1B.2	Chaparral and coastal scrub.	(April) May to September (October)	**Absent.** No suitable habitat is present within the BSA.
Micropus amphibolus	Mt. Diablo cottonweed	--	--	3.2	Broadleafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland. Grows in rocky soils.	March to-May	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Monolopia gracilens	woodland woolythreads	--	--	1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland. Grows in serpentine soils.	(February) March to July	**Absent.** No suitable habitat is present within the BSA.
Navarretia myersii ssp. *myersii*	pincushion navarretia	--	--	1B.1	Vernal pools. Often grows in acidic soils.	April to May	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Navarretia paradoxiclara	Patterson's navarretia	--	--	1B.3	Meadows and seeps. Grows in serpentine and vernally mesic soils.	May to June (July)	**Absent.** No suitable habitat is present within the BSA.
Navarretia prostrata	prostrate vernal pool navarretia	--	--	1B.1	Vernal pools and mesic soils in coastal scrub, meadows and seeps, and valley and foothill grassland (alkaline).	April to July	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	--	--	1B.2	Chaparral, coastal prairie, and coastal scrub. Grows in mesic soils.	March to June	**Absent.** No suitable habitat is present within the BSA.
Plagiobothrys glaber	hairless popcornflower	--	--	1A	Meadows and seeps (alkaline) and marshes and swamps (coastal salt).	March to May	**Absent.** Presumed extirpated in California. Additionally, there is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Puccinellia simplex	California alkali grass	--	--	1B.2	Vernal pools in chenopod scrub, meadows and seeps, and valley and foothill grassland.	March to May	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Senecio aphanactis	chaparral ragwort	--	--	2B.2	Chaparral, cismontane woodland, and coastal scrub. Grows in alkaline soils.	January to April (May)	**Absent.** No suitable habitat is present within the BSA.
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	--	--	1B.2	Meadows and seeps and marshes and swamps. Grows in mesic soils.	February to May (June)	**Absent.** There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	--	--	2B.2	Marshes and swamps (assorted shallow freshwater). Grows in mesic soils.	May to July	**Absent.** No suitable habitat is present within the BSA.
Suaeda californica	California seablite	E	--	1B.1	Marshes and swamps (coastal salt). Grows in mesic soils.	July to October	**Unlikely to occur.** There is only marginally suitable habitat within and around the BSA.
Trifolium amoenum	two-fork clover	E	--	1B.1	Usually occurs in wetlands in valley and foothill grassland and wetland-riparian areas. Has a weak affinity for serpentine soils.	April to June	**Absent.** No suitable habitat is present within the BSA.

Scientific Name	Common Name	Federal Status[a]	State Status[a]	CNPS Status[a]	Habitat	Blooming Period	Likelihood of Presence
Trifolium hydrophilum	saline clover	--	--	1B.2	Marshes and swamps, alkaline grassland, and vernal pools. Found in areas with alkaline soils. Majority of occurrences are within the San Francisco Bay Area.	August to June	**Unlikely to occur.** There is only suitable habitat within the external BSA, where maintenance or access work infrequently occurs and would not impact salt marsh habitat.
Tropidocarpum capparideum	caper-fruited tropidocarpum	--	--	1B.1	Valley and foothill grassland (alkaline hills).	March to April	**Absent.** No suitable habitat is present within the BSA.

[a]Status designations are as follows:
Federal Designations:
E = Federally Endangered, T = Federally Threatened
State Designations:
E = State Endangered, T = State Threatened
California Native Plant Society (CNPS) California Rare Plant Rank:
1A = Presumed extirpated in California and either rare or extinct elsewhere
1B = Rare, threatened, or endangered in California and elsewhere
2B = Rare, threatened, or endangered in California, but more common elsewhere
3 = More information is needed - a review list
4 = Limited distribution - a watch list
Threat Rank:
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 = Fairly threatened in California (20 to 80% of occurrences threatened/moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Sources:
California Department of Fish and Wildlife (CDFW). 2020. California Natural Diversity Database. Sacramento, CA. Accessed June 24, 2020.
California Native Plant Society (CNPS). 2020. Online Inventory of Rare, Threatened and Endangered Plants of California. Accessed June 24, 2020. *http://www.rareplants.cnps.org/advanced.html*
U.S. Fish and Wildlife Service (USFWS). 2020. Environmental Conservation Online System: Information, Planning and Conservation System (IPaC). Accessed June 24, 2020. *https://ecos.fws.gov/ipac/*.

Table E-2. Special-Status Wildlife Species Identified in Records Searches

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
Fish	*Acipenser medirostris*	green sturgeon	T	--	--	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Spawns in the Sacramento River. Spawns at temps between 8-14°C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	**Potential to Occur.** Suitable foraging habitat is present within open water and intertidal mudflats (during high tide) of the Project area. The BSA is within designated critical habitat. Sturgeon have the potential to be present within the BSA year-round.
	Hypomesus transpacificus	delta smelt	T	E	--	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities <2 ppt.	**Absent.** This species resides in the Sacramento-San Joaquin Delta and the biological study area exceeds salinity that this species occurs.
	Oncorhynchus mykiss irideus	steelhead - central California coast Distinct Population Segment	T	--	--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**Seasonally Present.** Suitable habitat is present, and species is known to be present in open water of the BSA; however, this species is unlikely to occur between July and October. One CNDDB occurrence within 2 miles of the BSA.
	Spirinchus thaleichthys	longfin smelt	C	T	--	Euryhaline, nektonic, and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	**Potential to occur.** There is potentially suitable habitat within aquatic habitat in the external areas of the BSA, where maintenance or access work infrequently occurs. The San Francisco Bay Study has not detected this species near the BSA in recent years (CDFW 2020a), but this species has recently been found in restored salt marsh habitat in and around the mouth of Coyote Creek (Lewis et al. 2020).

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
Invertebrates	*Bombus occidentalis*	western bumble bee	--	C	--	Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	**Unlikely to occur.** Required flowering plants and suitable habitat is not present within the BSA.
	Branchinecta lynchi	vernal pool fairy shrimp	T	--	--	Endemic to the grasslands of the central valley, central coast mountains and south coast mountains in rain-filled vernal pools and swales.	**Unlikely to occur.** A vernal pool is located adjacent to the BSA in Milpitas, however there is no suitable habitat in the BSA. No CNDDB occurrences within 2 miles of the BSA.
	Callophrys mossii bayensis	San Bruno elfin butterfly	E	--	--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno mountain, San Mateo county. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	**Absent.** No suitable habitat is present within the BSA.
	Euphydryas editha bayensis	Bay checkerspot butterfly	T	--	--	Native grasslands on outcrops of serpentine soil. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *Orthocarpus purpurscens* are the secondary host plants.	**Absent.** No suitable habitat is present within the BSA.
	Lepidurus packardi	vernal pool tadpole shrimp	E	--	--	Occur in a wide variety of seasonal habitats, including vernal pools, clay flats, alkaline pools, ephemeral stock tanks, roadside ditches, and road ruts. The vernal pool tadpole shrimp has not been reported as utilizing strongly saline habitats.	**Unlikely to occur.** BSA is too saline for this species. A vernal pool is located adjacent to the BSA in Milpitas, however there is no suitable habitat in the BSA. Two CNDDB occurrences within 2 miles of the BSA.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
Amphibians	*Ambystoma californiense*	California tiger salamander - Central Valley DPS	T	T	--	Need underground refuges, especially ground squirrel, gopher, or other fossorial mammal burrows, and for breeding uses vernal pools or other generally seasonal water sources.	**Unlikely to occur.** No suitable habitat is present within the BSA. Four CNDDB occurrences within 2 miles of the BSA.
	Rana aurora draytonii	California red-legged frog	T	--	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. May travel up to 2 miles in upland habitat between breeding sites, using fossorial mammal burrows, rocks, vegetation, or artificial structures for shelter.	**Absent.** No suitable habitat is present within the BSA. No CNDDB occurrences within 2 miles of the BSA.
Reptiles	*Chelonia mydas*	green sea turtle	T	T	--	Spend most of their time in shallow, coastal waters with lush seagrass beds, inshore bays, lagoons, and shoals with lush seagrass meadows.	**Absent**. No suitable habitat is present within the BSA.
	Masticophis lateralis euryxanthus	Alameda whipsnake	T	T	--	Typically found in chaparral and scrub habitats, but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices, or abandoned rodent burrows.	**Absent.** No suitable habitat is present within the BSA.
	Thamnophis sirtalis tetrataenia	San Francisco garter snake	E	E	FP	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo county and extreme northern Santa Cruz county.	**Absent.** No suitable habitat is present within the BSA.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
Birds	*Agelaius tricolor*	tricolored blackbird	--	T	SSC	Requires open water, protected nesting substrate which may also occur in uplands, and foraging area with insect prey within a few kilometers of the colony.	**Potential to occur.** Marginally suitable foraging habitat is present within the external areas of the Project. Four CNDDB occurrences within 2 miles of the BSA.
	Asio flammeus	short-eared owl	--	--	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	**Present.** Suitable foraging habitat is present within the external areas of the Project. Species documented by USFWS during Ridgway's rail survey at Newark Plant in 2019.
	Athene cunicularia	burrowing owl	--	--	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**Potential to occur.** Suitable foraging habitat is present within the outboard berms and other upland areas within the BSA. Ten CNDDB occurrences within 2 miles of the BSA.
	Brachyramphus marmoratus	marbled murrlet	--	T	--	Spend the majority of their lives on the ocean but come inland to nest. They generally nest in old-growth forests, characterized by large trees, multiple canopy layers, and moderate to high canopy closure.	**Absent.** No suitable habitat is present within the BSA. No CNDDB occurrences within 2 miles of the BSA.
	Charadrius alexandrinus nivosus	western snowy plover	T	--	SSC	Sandy beaches, salt pond berms and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur at berms and intertidal mudflats within the BSA. Eight CNDDB occurrences within 2 miles of the BSA.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Circus cyaneus	northern harrier	--	--	SSC	Coastal salt and freshwater marshes, nesting and foraging habitats in grasslands and agricultural fields.	**Present.** Suitable foraging habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Five CNDDB occurrences within 2 miles of the BSA.
	Coccyzus americanus occidentalis	western yellow-billed cuckoo	T	E	--	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Absent.** No suitable habitat is present within the BSA. No CNDDB occurrences within 2 miles of the BSA.
	Coturnicops noveboracensis	yellow rail	--	--	SSC	Nests in shallow freshwater sedge marshes; winters in wet meadows and marshes with cordgrass, salt grass, sedges, and other low vegetation. Not found in deeper areas with tall vegetation, such as cattail marshes.	**Unlikely to occur.** Marginally suitable habitat is present within tidal marsh habitat in the external area of the BSA; however only during the winter. Four CNDDB occurrences within 2 miles of the BSA.
	Elanus leucurus	white-tailed kite	--	--	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	**Present.** Suitable foraging habitat is present within the BSA and this species has been observed within the BSA. Presence within the BSA would likely be limited to fly overs or foraging and not nesting because the BSA lacks suitable trees for nesting. Six CNDDB occurrences within 2 miles of the BSA.
	Falco peregrinus anatum	American peregrine falcon	DL	DL	FP	Wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	**Present.** Suitable foraging habitat is present within the BSA. Have been observed annually by USFWS at the Newark Plant.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Geothlypis trichas sinuosa	salt marsh common yellowthroat	--	--	SSC	Resident of the San Francisco Bay region, in freshwater and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Suitable habitat is present within tidal marsh in the external areas of Project, where maintenance or access work infrequently occurs. Eight CNDDB occurrences within 2 miles of the BSA.
	Lanius ludovicianus	loggerhead shrike	--	--	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes.	**Potential to occur.** Suitable foraging habitat is present within the BSA.
	Laterallus jamaicensis coturniculus	California black rail	--	T	FP	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes. Needs dense vegetation for nesting habitat.	**Present.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Eleven CNDDB occurrences within 2 miles of the BSA.
	Melospiza melodia pusillula	Alameda song sparrow	--	--	SSC	Resident of salt marshes bordering south arm of San Francisco bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Fourteen CNDDB occurrences within 2 miles of the BSA.
	Pelecanus occidentalis californicus	California brown pelican	DL	DL	FP	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	**Likely to occur.** Suitable foraging habitat is present both within the internal and external areas of the Project. Nesting habitat is not present within the BSA as it is outside of its range.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Rallus obsoletus	California Ridgway's rail	E	E	FP	Salt water and brackish marshes with tidal sloughs. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Present.** Suitable foraging and nesting habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Thirteen CNDDB occurrences within 2 miles of the BSA.
	Riparia riparia	bank swallow	--	T	--	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Required vertical banks or cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	**Unlikely to occur.** No suitable nesting habitat within the BSA. One CNDDB occurrences within 2 miles of the BSA.
	Rynchops niger	black skimmer	--	--	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	**Likely to occur.** Suitable habitat is present both within the internal and external areas of the Project.
	Sternula antillarum browni	California least tern	E	E	FP	Nests along the coast from San Francisco Bay south to northern Baja California, Mexico on bare sparsely vegetated, flat substrates such as sand beaches, alkali flats, landfills, or paved areas.	**Present.** Suitable foraging and nesting habitat is present within the BSA. Five CNDDB occurrences within 2 miles of the BSA.
Mammals	*Reithrodontomys raviventris* (southern subspecies; *R. r. raviventris*)/ salt marsh harvest mouse	salt marsh harvest mouse	E	E	FP	Only found in the saline emergent wetlands of San Francisco Bay and its estuaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**Present.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Species has been documented in Newark Plants 1 and 2 by USFWS and confirmed via genetic testing by UC Davis. Twenty-six CNDDB occurrences within 2 miles of the BSA.

Category	Scientific Name	Common Name	Status[a] Federal	Status[a] State	Status[a] CDFW	Habitat	Likelihood of Presence
	Sorex vagrans halicoetes	salt marsh wandering shrew	--	--	SSC	Salt marshes of the south arm of San Francisco Bay.	**Likely to occur.** Suitable habitat is present within the BSA and this species is known to occur in tidal marsh habitat within the BSA. Five CNDDB occurrences within 2 miles of the BSA.
	Taxidea taxus	American badger	--	--	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**Absent.** No suitable habitat is present within the BSA.
Marine Mammals	*Phoca vitulina richardsi*	Pacific harbor seal	MMPA	--	--	Favor near-shore coastal waters and are often seen on rocky islands, sandy beaches, mudflats, bays, and estuaries. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding.	**Present.** Suitable habitat is present within the external areas of the Project and this species is known to occur within the open water and intertidal mudflat habitat of the BSA. A pupping site is known to be present along both Mowry Slough and Newark Slough.
	Phocoena	harbor porpoise	MMPA	--	--	Cool temperate waters along the coasts of the North Pacific, North Atlantic, and the Black Sea. In California they occur north of Pt. Conception.	**Unlikely to occur.** Known to occur in San Francisco Bay occasionally, but rare to occur south of the San Mateo Bridge and therefore outside of the BSA.
	Zalophus californianus	California sea lion	MMPA	--	--	Shallow waters of the eastern North Pacific Ocean. Use various intertidal substrates that are exposed at low to medium tide levels for resting and breeding. Noted for using anthropogenic structures such as floating docks, piers, and buoys to haul out of the water to rest.	**Present.** Suitable habitat is present within the external areas of the Project and this species is known to occur. There are no known haul-out locations in the BSA.

[a]Status designations are as follows:

Federal Designations:
E = Federally Endangered, T = Federally Threatened, C = Candidate, DL = Delisted, MMPA = Marine Mammal Protection Act

State Designations:
E = State Endangered, T = State Threatened, C = Candidate, DL = Delisted

California Department of Fish and Wildlife (CDFW) Designations:
SSC = Species of Special Concern, FP = Fully Protected

Sources:

California Department of Fish and Wildlife (CDFW). 2019. Special Animals List. Periodic publication. 67 pp. *https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline*.

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California Department of Fish and Wildlife (CDFW). 2020b. California Natural Diversity Database, Biogeographic Data Branch. Sacramento, CA. Accessed June 24, 2020. *https://www.wildlife.ca.gov/data/cnddb*.

U.S. Fish and Wildlife Service (USFWS). 2020. Environmental Conservation Online System: Information for Planning and Consultation (IPaC). 2020. Accessed June 24, 2020. *https://ecos.fws.gov/ipac/*.

National Marine Fisheries Service (NMFS). 2020. California Species List Tool. Queried for endangered and threatened species within Redwood Point, Palo Alto, Newark, Mountain View, and Milpitas USGS 7.5-minute topographic quadrangles. *https://archive.fisheries.noaa.gov/wcr/maps_data/california_species_list_tools.html*. Accessed June 24, 2020.

San Francisco Bay Joint Venture. 2020. San Francisco Estuary Invasive Spartina Project. *https://www.sfbayjv.org/project-san-francisco-estuary-invasive-spartina-project.php* Accessed September 4, 2020.

APPENDIX F Noise Calculations

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Appendix F Noise Calculations

This appendix to the noise and vibration impact analysis presented in Section 3.10 provides additional detail regarding the analyses performed in support of the impact conclusions.

Table F-1 at the end of this appendix presents the calculated noise levels at each of the four nearest receptors for each of the existing maintenance and newly-proposed activities. The existing noise levels from Cargill's existing permitted operations form the baseline comparison to the changes proposed in maintenance activities for the next 10 years. The Project would implement the following new or additional activities: (1) preliminary sea level rise (SLR) adaptation efforts, including a vinyl sheet pile installation study (evaluation) to reinforce salt pond berms at a test site located approximately one mile from any sensitive receptors; (2) the number of times that locks are accessed per year would approximately double; and (3) Cargill would remove sediment from in front of intakes. In addition, the number of repair events would increase. The Project would also permit Cargill to develop and implement new maintenance methods, if more efficient, environmentally-friendly methods are identified. The use of new, more environmentally-friendly methods would not be expected to result in any increases in noise levels.

Therefore the acoustical analysis of this Project focuses on the potential noise impacts where new activities would occur or where a significant increase in the magnitude of the noise levels at sensitive receptors may occur. For example, some activities will occur for more days per year than previously have occurred, but their noise level on any one day will not be greater than before and therefore their daily average noise levels will not increase.

Equipment Noise Level Calculations

Noise impacts from maintenance activities generally result when those activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), in areas immediately adjacent to noise-sensitive receptors (primarily residential use), or when maintenance lasts over extended periods of time.

Noise levels from maintenance activities at or near the Project site would fluctuate depending upon the particular type, number, and duration of use of various pieces of construction equipment. Table 3.10-1 in Section 3.10.1 of the Environmental Assessment shows typical exterior noise levels generated by various types of construction equipment proposed for use in these maintenance activities. Table F-1 shows predicted maintenance noise levels at the nearest sensitive receptors from Project activities at Cargill's various ponds, based on consideration of the operation of three of the loudest equipment types during their simultaneous operations at full power with a 50 percent acoustical usage factor. The assumption of operation at full power is likely to overstate the actual noise generation, as most equipment rarely functions at full power, and it is unlikely that three pieces of equipment would do so simultaneously.

New Maintenance Activities

As discussed below, the magnitude of Project noise level increases compared with ambient noise levels in the vicinity of sensitive receptors without the new Project operations will be less-than-significant. Additionally, the resulting noise levels from these new maintenance activities will comply with regulatory standards. In addition to Cargill's ongoing maintenance activities, it proposes the following new activities for maintaining its facilities:

Sea Level Rise Adaptation

As part of this Project, Cargill may conduct a study for SLR adaptation that would include driving vinyl sheet pile on the inboard side of some outboard berms. Vinyl sheet piles are also driven using a vibratory driver or an excavator-mounted sheet pile driver. Because soils in the Project area are typically soft, low-impact energy drivers should be adequate for most pile installation.

To calculate the magnitude of the increase in noise levels during vinyl sheet pile installation work at the nearest sensitive receptors, first the baseline noise levels for berm maintenance in that area is calculated. Then the louder noise level during vinyl sheet pile installations there is calculated. Next both of those noise levels are calculated at the nearest sensitive receptors and added to the existing ambient noise level there. The difference between this existing permitted noise level and the new noise level with vinyl sheet pile work can then be compared to the threshold of significance for noise level increases.

The nearest sensitive receptors to the study location for vinyl sheet pile installation on the exterior berm of Pond P2-12 are about 5,000 feet to the northeast in the westernmost portion of the FMC Parcel C residential subdivision, near Pond FMC-1. At that long distance of nearly a mile, such new activities would hardly even be audible as shown below.

- Existing permitted operations to maintain this berm involve use of an excavator and a tractor, which emit about 85 and 84 dBA L_{eq} respectively at a distance of 50 feet. Their combined noise levels would be about 87.5 dBA L_{eq} at 50 feet. At the nearest sensitive receptors about 5,000 feet away, that combined noise level would diminish to about **42.5 dBA L_{eq}** due to distance and atmospheric absorption over that long distance.[14]
- The Project's new vinyl sheet pile installation with a vibratory pile driver would add about 95 dBA L_{eq} to the noise levels of the excavator and a tractor, for a combined noise level of 95.7 dBA L_{eq} at 50 feet. At the nearest sensitive receptors about 5,000 feet away, that combined noise level with the vibratory pile driver noise would diminish to about **50.7 dBA L_{eq}** due to distance and atmospheric absorption.[15]

The next step is to analyze the increase in noise levels these nearest residences would experience during vinyl sheet pile installations:

- When the permitted noise level of current Cargill operations of 42.5 dBA L_{eq} is added to these sensitive receptors' existing noise levels of between about 57 to 60 dBA L_{eq} which is

14 Calculation: Sound levels attenuate by about 6 dBA for each doubling of distance, so the noise level at that 5,000 foot distance would be 47.5 dBA. Then an additional reduction of about 5.0 dBA for atmospheric absorption would reduce it further to **42.5 dBA L_{eq}**. Atmospheric absorption typically reduces transmitted noise by about 5.0 dB in 5,000 feet. Source: http://www.sengpielaudio.com/calculator-air.htm

15 Sound levels attenuate by about 6 dBA for each doubling of distance, so the noise level at that 5,000 foot distance would be 55.7 dBA. Then an additional reduction of about 5.0 dBA for atmospheric absorption would reduce it further to **50.7 dBA L_{eq}**.

typical in residential areas in the daytime here,[16] the combined existing ambient noise level during current berm maintenance operations would be about 57.2 to 60.1 dBA L_{eq}.

- When the Project's higher noise level during vinyl sheet pile installation work of 50.7 dBA L_{eq} as measured at these homes 5,000 feet away is added to these sensitive receptors' existing noise levels of between about 57 to 60 dBA L_{eq}, their combined noise levels during pile installations would be about 57.9 to 60.5 dBA L_{eq}.

The magnitude of the increase from current operations of 57.2 to 60.1 dBA L_{eq} to a barely louder 57.9 to 60.5 dBA L_{eq} during pile installations would represent an increase of only about 0.5 dBA to 0.7 dBA above existing ambient noise levels. An increase of less than 1 dBA is not generally audible to people in such residential settings. The noise impact from an increase like this in Project noise levels during vinyl sheet pile installation at the nearest sensitive receptors of less than 1.5 dBA is therefore considered to be less than significant. At more distant homes, this noise level increase would be lower yet and its noise impact would also be less-than-significant.

<u>Sea Level Adaptation Activities' Noise Levels Compliance with Regulatory Standards</u>

As calculated and shown in Table F-1, the Project's noise levels during the new sea level adaptation work at the primary berms and with vinyl sheet pile installation would not exceed local noise standards at sensitive receptors. These new maintenance activities are far away so their noise levels would be decreased substantially by distance. Their noise levels would be less than 59 dBA L_{eq} at the nearest sensitive receptors. As such, the noise impact from new sea level adaptation work including vinyl sheet pile installation there would be less-than-significant. Moreover, existing mobile homes and RVs adjacent to the Redwood City Plant are already exposed to US-101 freeway noise levels greater than 70 dBA L_{dn}. At these homes, that existing highway noise would mask such distant Project noise occurring with these new maintenance activities.

Increased Lock Access

This Project would increase the number of times per year that lock access activities occur. Locks are located adjacent to outboard pond berms within areas surrounded by salt marsh. Lock access would occur at a distance of about 8,400 feet from sensitive receptors in the Newark Pond 1 area's vicinity, about 7,000 feet from homes in the Newark Plant 2 area's vicinity, and about 5,200 feet from sensitive receptors in the Redwood City Plant's vicinity. But these maintenance activities will occur on more days per year, not more times per day. Therefore these maintenance activities would not generate greater noise level increases by comparison to

16 Refer to the 2013 *Trumark Dumbarton TOD Residential Project Supplemental EIR*, where a noise level measurement of 63.0 dBA L_{dn} at Site ST-1 was obtained near Enterprise Drive, just north of Willow Street, in Newark on May 30, 2013 by Illingworth & Rodkin, Inc., *https://www.newark.org/home/showdocument?id=212*. In such settings, an hourly measurement there would be approximately 6 dBA lower, or about **57 dBA L_{eq}**.
Also refer to the 2011 *Dumbarton TOD Specific Plan EIR*, p. 4.10-11, Fig. 3.10-2, Noise Measurement Locations, Site 1, describing a noise level measurement of **60.1 dBA L_{eq}** at Site 1 (the terminus of the Acorn Place cul-de-sac, in Newark, a residential neighborhood not near any highway). (Note that there is an error in that EIR's Table 3.10-3 where the site locations 1 and 2 got swapped, but 60.1 dBA was measured at Acorn Place.)
https://www.newark.org/home/showdocument?id=210

existing ambient noise levels at sensitive receptors during any one day. Even if they did, the noise level increase during lock access activities would be less than that during vinyl sheet pile installation, so their impact on sensitive receptors would be less yet. Operations to increase lock access would result in noise level increases that are less-than-significant. The noise level increase from the increased lock access activities would also comply with local standards at the nearest residences.

Sediment Removal from Intakes

Intake structures consist of tide gates and pumps to bring Bay water into the system under controlled conditions. The Project proposes removing sediment from the intake structures using an excavator, fork lift, dump truck, a haul truck, and a pickup truck. At some locations, an amphibious excavator and a barge might also be used.

Cargill uses haul trucks under its existing permit to import clean material from local sources for berm maintenance. This Project may result in a slight increase in truck trips in the vicinity of Newark Plants 1 and 2, and the Redwood City Plant. If additional sediment or soil that cannot be reused on site because of its geotechnical characteristics is generated as a result of, for example, sediment removal at the intakes, that sediment or soil would have to hauled to a local landfill. Cargill predicts that dump trucks operating to remove this sediment would only operate on five days a year. At most, that hauling could result in approximately 120 truck trips per year, or on average about 24 trips per day during sediment removal activities.

The Project would generate a slight increase in trucking that could increase noise levels along various haul routes. These haul routes would be along heavily-trafficked roads so the increase in noise levels from sediment hauling would not create a significant increase in noise along those routes. That increase would represent only a small percentage of total traffic volume along area roadways. The addition of Project traffic would increase noise levels by 1.5 dBA L_{dn} or less. A traffic noise increase of less than 1.5 dBA L_{dn} is not considered to result in a significant noise impact. Therefore the noise impacts of these increases would be less-than-significant.

Removal of sediment at intakes would also comply with applicable noise standard. The closest intake to new homes in the *FMC Parcel C* residential subdivision in the City of Newark would be about 450 feet south of the Green Hornet #2 pump intake structure in the Newark Plant 1 at Pond P1-PP1. At that distance to nearby homes, this maintenance work would generate a noise level (Table F-1) of approximately 66.0 dBA L_{eq}. If that work continued from 8 a.m. to 5 p.m., its day-night average noise level would be about 62.2 dBA L_{dn} and would be consistent with the City of Newark's General Plan standard for conditionally-acceptable noise levels at residences of 60 to 70 dBA L_{dn}.

The noise levels from sediment removal activities at the other Project intake structures would be less intrusive because they are farther from sensitive receptors. At the Newark Plant 2's Green Hornet #1 pump, the closest sensitive receptors are new homes in the Bridgeway subdivision about 1,600 feet to the northeast where such noise levels from sediment removal activities would reduce to about 55.0 dBA L_{eq}. That noise level, when converted to a day-night average of 51.2 dBA L_{dn}, also complies with the City of Newark's normally-acceptable noise standards at residences of up to 60 dBA L_{dn}.

Sensitive receptors are even farther away from intakes at Baumberg Pond B-3C where sediment removal activities would produce noise levels at those homes (7,300 feet away) of about 48.2 dBA L_{eq}. The City of Hayward's noise standards allow commercial noise sources to expose residential properties to as much as 60 dBA from 7:00 a.m. to 9:00 p.m. The noise levels of these sediment removal activities would be less than and would comply with these noise standards at the nearest homes on Monterey Drive.

At the Redwood City Plant, the nearest sensitive receptors are mobile homes and RVs located about 140 feet from the Redwood City Brine Pump intake structure at Pond RC-7A. If sediment removal work occurs there, the noise level at these sensitive receptors would be about 76.2 dBA L_{eq} (Table F-1). If that work only occurs full time between 8:00 a.m. and 5:00 p.m., it converts to a day-night average noise level of 72.4 dBA L_{dn} appropriate for comparison to the local noise standards. The mobile homes and RVs here are already exposed to US-101 freeway noise levels of over 70 dBA L_{dn} according to the Redwood City General Plan. Maintenance activity noise is temporary. Moreover, the sediment removal activities have been previously permitted on this Cargill pond area. Because the nearby noise-sensitive receptors are already exposed to loud freeway noise, and because the Project's sediment removal activity noise levels at these mobile homes and RVs are temporary, these noise levels would comply with the local standards and the Project's noise impact would be less-than-significant.

Off-Site Project Traffic Noise Level Increases

As described above, any increased off-site truck traffic exporting sediments would not produce a significant increase in noise levels along those trucks' haul routes. In addition to the increased off-haul of sediments from intakes, Cargill also anticipates increasing total soil imports by approximately 9,600 CY/year, which equates to approximately 12-15 truck trips per work day during the 4-month construction season when outside sources are likely to deliver material to Cargill. Also, Cargill's increases in personal vehicle trips would also be insignificant. Therefore the noise impacts that might occur from this Project's increased maintenance activities would be less-than-significant.

Noise Impacts to Recreational Users

Recreational users could get close to operating heavy equipment, and could therefore experience high noise levels on a short-term basis. Assuming local trail users choose to walk past operating heavy equipment rather than avoid areas with active maintenance, they could be exposed to noise levels in excess of 65 dBA for a distance of up to 1,600 feet (800 feet in either direction from the operating equipment). At an average walking speed of 3 mph, trail users would be exposed to high levels of noise for up to 6 minutes. Given the short duration of the potential exposure and the opportunity to use other berms for recreation, the potential impact to recreational users of the berms is less than significant.

Project maintenance activity noise would not significantly impact the other nearby recreational facilities. Such noise impacts on people using the Bedwell Bayfront Park, the San Francisco Bay Trail, the Bayview Trail in Coyote Hills Regional Park, the Don Edwards San Francisco Bay National Wildlife Refuge, the Alameda Creek Regional Trail, the Newark Slough Trail, or the Bayshores Park would be less than significant because recreational users would be transiting through or near the Project areas only briefly to access other portions of the recreational areas that would be further away from Project maintenance operations. Therefore, because the proposed Project would be in compliance with applicable thresholds, this impact would be less than significant.

Table F-1. Maintenance Noise Levels at Nearest Sensitive Receptors from Project Activities

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Berm Grading	Bulldozer (85) Dump Truck (84)	84.5	Pond B-3C	950	59.0
			Newark Plant 1	450	65.4
			Newark Plant 2	60	82.9
			Redwood City Plant	75	81.0
Maintain Berm Height and Width	Bulldozer (85) Excavator (85) Dump Truck (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Address Priority Berms for Sea Level Rise	Bulldozer (85) Excavator (85) Dump Truck (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Compact Internal Core of Berms	Excavator (85) Grader (85) Scraper (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Making Berms Driveable	Bulldozer (85) Grader (85) Dump Truck (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Outboard Erosion Repair (assumes outer faces of berms far from sensitive receptors)	Excavator (85) Haul Truck (84) Dump Truck (84)	86.1	Pond B-3C	N/A	--
			Newark Plant 1	15,000	36.6
			Newark Plant 2	5,000	46.1
			Redwood City Plant	3,500	49.2

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Interior Erosion Repair	Dump Truck (84) Excavator (85) Tractor /Loader (84)	86.1	Pond B-3C	950	60.5
			Newark Plant 1	450	67.0
			Newark Plant 2	60	84.5
			Redwood City Plant	75	82.6
Lock Access	Excavator (85) Grader (85) Amphibious Excavator (85)	86.8	Pond B-3C	N/A	--
			Newark Plant 1	8,400	42.3
			Newark Plant 2	7,000	43.8
			Redwood City Plant	5,200	46.4
Vinyl Sheet Pile Installation	Excavator (85) Tractor /Loader (84) Vibratory Pile Driver (95)	92.7	Pond B-3C	N/A	--
			Newark Plant 1	N/A	--
			Newark Plant 2	5,000	52.7
			Redwood City Plant	3,500	55.8
Sediment Removal from Intakes	Dump Truck (84) Excavator (85) Fork Lift (79)	85.1	Pond B-3C	7,300	48.2
			Newark Plant 1	450	66.0
			Newark Plant 2	1,600	55.0
			Redwood City Plant	140	76.2
Minor Earthmoving Activities	Bulldozer (85) Dump Truck (84) Excavator (85)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	450	67.4
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Repair of Water Control Structures	Air Compressor (83) Bore/Drill Rig (82) Vibratory Driver (95)	92.5	Pond B-3C	950	66.9
			Newark Plant 1	450	73.4
			Newark Plant 2	1,500	62.9
			Redwood City Plant	140	83.5
Repair of Access Structures	Air Compressor (83) Bore/Drill Rig (82) Crane (81)	83.8	Pond B-3C	7,300	40.6
			Newark Plant 1	450	64.8
			Newark Plant 2	1,550	54.3
			Redwood City Plant	3,500	46.9

Activity	Loudest Equipment Used (dBA L_{max})	Combined Noise Level at 50 feet (dBA L_{eq})	Project Area Location	Distance to Nearest Sensitive Receptor (feet)	Noise Level at Nearest Sensitive Receptor (dBA L_{eq})
Minor Maintenance and Repair	Air Compressor (83) Tractor /Loader (84) Crane (81)	84.6	Pond B-3C	950	59.0
			Newark Plant 1	450	65.5
			Newark Plant 2	1,700	54.0
			Redwood City Plant	140	75.7
Re-establishing Vehicle Access on Internal Berms	Bulldozer (85) Grader (85) Tractor /Loader (84)	86.5	Pond B-3C	950	60.9
			Newark Plant 1	550	65.6
			Newark Plant 2	60	84.9
			Redwood City Plant	75	82.9
Algae Removal from Ponds	Bulldozer (85) Haul Truck (85) Pickup Truck (55)	84.5	Pond B-3C	950	59.0
			Newark Plant 1	450	65.4
			Newark Plant 2	60	82.9
			Redwood City Plant	75	81.0

Note:
These calculations assume a 50% *acoustical usage factor*. The acoustical usage factor is the fraction of time that the equipment generates noise at the maximum level. They also assume equipment is operated at full power.
L_{max} = Maximum sound level; the highest sound level measured during a single noise event.

APPENDIX G Project Mailing List

To be included in final submittal

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