



Preface

2007: Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment, & Conceptual Design

In 2007, the Water Transit Authority and the Port of Redwood City completed an evaluation of three potential ferry locations to determine if there were any issues that made either site impractical. This report is called the “Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment and Conceptual Design” (Report). The Report identified which of the three sites was most optimal for a ferry service. It also performed a preliminary review to determine if there were any significant planning, legal, operational or environmental obstacles preventing the use of the most optimal location. The Report did not evaluate the feasibility of ferry service, which is typically done through a financial feasibility study (see below).

While the Report included environmental assessments, it did not include an Environmental Impact Report (EIR). A Biological Resources Assessment and Preliminary Wake Wash Impact Analysis were prepared to identify potential major obstacles in any of the three potential ferry locations. An EIR is an in-depth document that is required as part of the California Environmental Quality Act to identify potential significant adverse environmental impacts and propose mitigations or alternatives to reduce the impacts of a potential project. While an EIR was not included in the 2007 Report, the Report identified the need to prepare one in future analysis.

2019: Financial Feasibility Study and Cost Benefit & Economic Impact Analyses

In February of 2019, the City initiated a Financial Feasibility Study and Cost Benefit & Economic Impact Analyses (Study). The goal of this Study is to understand if a ferry service to and from Redwood City is viable based on ridership. In other words, it seeks to answer whether there will be enough riders. Additionally, the Study will estimate operational costs, capital costs, and look to see if there are added societal benefits for providing a ferry service. If the Study shows potential ridership is significant enough, then City Council and the Port Commission will consider how to proceed with the next step in pursuing a ferry service. Next steps may include a Business Plan (required by the San Mateo County Transportation Authority) and a Conceptual Design, followed by an EIR.

Biological Resources Assessment Redwood City Ferry Terminal

PORT OF REDWOOD CITY, SAN MATEO COUNTY
CALIFORNIA

Prepared For:

Michael Fajans
CHS Consulting Group
130 Sutter Street, Suite 468
San Francisco, CA 94104

Contact:

Justin Semion
semion@wra-ca.com

Date:

June 6, 2007



TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY.....	1
2.0	INTRODUCTION.	5
3.0	REGULATORY BACKGROUND.....	5
3.1	Special Status Species.	5
3.2	Sensitive Biological Communities.	7
4.0	METHODS.....	9
4.1	Biological Communities.	9
4.1.1	Non-sensitive Biological Communities.	10
4.1.2	Sensitive Biological Communities.....	10
4.2	Special Status Species.	11
4.2.1	Literature Review.	11
4.2.2	Site Assessment.....	11
5.0	RESULTS.	12
5.1	Biological Communities.	12
5.1.1	Non-sensitive biological communities.....	12
5.1.2	Sensitive Biological Communities.....	14
5.1.3	Biological Communities at Bair Island and Greco Island.....	15
5.1.4	Essential Fish Habitat.....	15
5.2	Special Status Species.	16
5.2.1	Plants.....	16
5.2.2	Wildlife.....	18
6.0	IMPACTS AND MITIGATION.	26
6.1	Project Description.....	26
6.2	Potential Impacts as a Result of the Proposed Project.....	27
6.2.1	Potential Impacts to Sensitive Biological Communities.....	27
6.2.2	Potential Impacts to Special Status Species.....	28
6.3	Mitigation Measures.....	31
6.3.1	Sensitive Biological Communities	31
6.3.2	Special Status Species.....	32
7.0	ALTERNATIVE FERRY TERMINAL LOCATIONS.....	35
7.1	Sensitive Biological Communities.	35
7.2	Special Status Species.	36
8.0	REFERENCES.....	36

LIST OF FIGURES

Figure 1.	Project Area Location Map.	6
Figure 2.	Biological Communities within the Project Area.	13
Figure 3.	Special Status Plant and wildlife Species known to Occur in and Adjacent to the Project Area.	17

LIST OF TABLES

Table 1. Impacts and Mitigation Measures for the Proposed Redwood City Ferry Terminal. 1
Table 2. Tidal Datums relative to Corps and BCDC Jurisdiction at the Port of Redwood City. 15

LIST OF APPENDICES

Appendix A- List of Observed Plant and Animal Species
Appendix B- Potential for Special Status Plant and Wildlife Species to Occur in the Project Area
Appendix C- wetland and Waters Permitting Scenarios for the Redwood City Ferry Terminal (WRA memo)

1.0 EXECUTIVE SUMMARY

WRA, Inc. has prepared this assessment of biological resources for the proposed Redwood City Ferry Terminal at the Port of Redwood City, Redwood City, California. A Biological Resources Assessment determines the potential for sensitive biological communities and special status species to occur at a project site based on a site visit and review of background literature (Section 5.0). If sensitive biological communities or special status species are observed during the site visit, they are noted. However, an assessment does not constitute full protocol level surveys for sensitive biological communities and special status species. As part of this assessment, potentially significant impacts on biological resources and mitigation measures to compensate for these impacts have been identified (Section 6.0).

This assessment examined the preferred terminal site at Westpoint Slough (Project Area), and surrounding areas along the proposed ferry route, for the potential presence of sensitive biological communities and special status species. Two alternative ferry terminal locations were also reviewed, one adjacent to Wharf #5, and one at the Conference Center/Portside (see Figure 1), to determine potential impacts that may occur as a result of ferry terminal construction at these alternative locations. Based on the results of the biological assessment, two sensitive biological communities, tidal wetlands, and tidal waters, are present in the Project Area, and the Project Area has the potential to support Essential Fish Habitat (EFH), another sensitive biological community. The Project Area also contains suitable habitat for four special status plant species and 21 special status wildlife species. An additional 7 special status wildlife species may occur in areas adjacent to the Project Area, and two special status wildlife species were observed adjacent to the Project Area during the site visit. Areas adjacent to the Project Area have the potential to support 10 special status plant species.

Table 1 below contains a summary of potential impacts that could occur as a result of the project, and mitigation measures to compensate for those impacts. Explanations of impacts and full descriptions of mitigation measures are in Section 6.0.

Table 1. Potential Impacts and Mitigation Measures for the Proposed Redwood City Ferry Terminal.

<p>Tidal Wetlands and Waters</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Placement of fill in tidal wetlands and waters; • Dredging required to create depths suitable for ferry navigation and docking <p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Increased opportunity for the establishment of non-native invasive species in the Project Area. • Maintenance dredging 	<ul style="list-style-type: none"> • Prepare Jurisdictional wetland Delineation for submittal to the Corps. • Avoid wetlands if feasible. If avoidance is not feasible, applicable permits will be needed from the Corps, RWQCB, and BCDC. Mitigation for impacts to tidal wetlands will be required at a minimum 1:1 (created to impacted) mitigation ratio. • Applicable permits will need to be obtained from the Corps, RWQCB, and BCDC prior to dredging or pile driving • Applicable dredging work windows should be followed, which would restrict dredging and pile driving to between September 1 and December 1. Dredging may be accomplished after June 1 upon approval of USFWS and completion of surveys for California Clapper Rail and California Black Rail • The Project Area should be monitored following completion of construction to ensure that
---	--	---

<p>Tidal Wetlands and Waters (cont.)</p>		<p>disturbed areas are not colonized with non-native invasive species, particularly smooth cordgrass. If invasive plant species are found, they should be removed using appropriate methods by coordinating efforts with the Invasive Spartina Project.</p> <ul style="list-style-type: none"> • Applicable maintenance dredging permits should be obtained from the Corps, RWQCB, and BCDC. Applicable dredging work windows should be followed, and BMPs should be implemented during maintenance dredging.
<p>Essential Fish Habitat</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Dredging during construction of the ferry terminal could result in impacts to oyster beds or eelgrass if either occurs in the dredging area <p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Operation of the ferry may result in impacts to oyster beds and eelgrass due to increased turbidity, decreased water quality, and wave and wake impacts if oyster beds or eelgrass are present along the proposed ferry route 	<ul style="list-style-type: none"> • Prior to dredging, a survey for native oyster beds should be conducted in the Project Area. • If native oyster beds are present in the impacted area, native oyster beds should be created at a minimum of a 1:1 ratio (created to impacted beds). • Areas along the ferry route should be surveyed to determine the locations of any native oyster beds

<p align="center">Essential Fish Habitat (cont.)</p>		<ul style="list-style-type: none"> • Ferries should be operated at speeds that do not increase turbidity and wave disturbance above existing levels.
<p align="center">Special Status Plant Species</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Construction of the new ferry terminal and associated structures may result in direct impacts to special status plants species if they are present within the Project Area. <p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Increased boat traffic may increase the potential for the spread of invasive plant species 	<ul style="list-style-type: none"> • Conduct protocol level rare plant surveys within the Project Area in early June and late August to determine the presence or absence of special status plant species with the potential to occur in the Project Area • Avoid special status plant species if feasible, or transplant species using appropriate techniques • The Project Area should be monitored following completion of construction to ensure that disturbed areas are not colonized with non-native invasive species, particularly smooth cordgrass. If invasive plant species are found, they should be removed using appropriate methods by coordinating efforts with the Invasive Spartina Project
<p align="center">Pacific Harbor Seal</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Pile driving and dredging may disturb Pacific harbor seal if haul out sites are located near the Project Area <p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Operation of the new ferry terminal has the potential to impact Pacific harbor seal haul out sites through visual and acoustic disturbance. 	<ul style="list-style-type: none"> • Conduct surveys in the Project Area and vicinity to determine if harbor seals haul out near the Project Area • Levels of acoustic disturbance from activities such as pile driving should be kept lower than 160 decibels, the limit recommended by the NMFS for the protection of marine mammals

<p style="text-align: center;">Pacific Harbor Seal (cont.)</p>		<ul style="list-style-type: none"> • NMFS may require monitoring of haul out sites by a qualified marine mammal monitor during construction activities. If harbor seals are determined to be affected by construction activity, construction methods may need to be modified as needed to reduce or eliminate the source of disturbance. The Service may also require a marine mammal Incidental Harassment Authorization Permit for potential disturbances to the seals • It is recommended that ferry routes maintain a distance of at least 30 meters from harbor seal haul out sites. • Loud and abrupt noises should be avoided within 300 meters of harbor seal haul out sites. All ferry lighting and ferry terminal lighting should be directed away from seal haul out sites.
<p style="text-align: center;">Nesting Bird Species</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Dredging and pile driving within 250 feet of California Clapper Rail and California Black Rail nesting habitat may result in impacts to nesting Rails. • Disturbance or removal of an active nesting special status birds or birds covered under the Migratory Bird Treaty Act 	<ul style="list-style-type: none"> • Follow applicable work windows for dredging and pile driving within 250 feet of nesting Rails. Work windows for these species are between September 1 and February 1. • If work must be conducted outside of work windows, the work may be conducted upon approval of the USFWS if pre-construction surveys for nesting Rails find that no Rails are

<p style="text-align: center;">Nesting Bird Species (cont.)</p>	<p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Increased wave and wake generated from ferry operations has the potential to result in impacts to special status avian species as a result of nest inundation. • Potential long term impacts to special status avian species may result from visual disturbance due to ferry terminal lighting, acoustic disturbance due to ferry operations, and increased presence of competitive common species. 	<p>nesting within 250 feet of the Project Area.</p> <ul style="list-style-type: none"> • If nesting rails are found within 250 feet of the work area, work may need to be postponed until the young have fledged from the nest • If ground disturbance is to begin within the breeding bird season (February through August), pre-construction surveys for breeding birds should be conducted within one month prior to the start of construction. • If breeding birds are found, an exclusion buffer of 50 to 500 feet (depending on the species and location) around the nest is recommended. • No surveys would be necessary if ground disturbance begins between September and January, outside of the breeding bird season • Conduct surveys along beaches on the outboard side of Bair Island to determine if they have the potential to support Western Snowy Plover and/or California Least Tern • Conduct additional studies as outlined in Section 6.2.2 to determine if wave and wake generated by ferry traffic will affect nesting bird species on Bair and Greco Island. These studies may include additional modeling of existing
--	--	--

<p style="text-align: center;">Nesting Bird Species (cont.)</p>		<p>wave and wake conditions, analysis of the wave and wake generated by the ferry vessel to be used at the site, and monitoring of existing ferry terminals adjacent to nesting habitat for special status species to determine if ferry operations have affected nesting habitats of these species</p> <ul style="list-style-type: none"> • Ferries may need to be operated at speeds that do not create waves that are greater in height than waves that occur under current conditions during the nesting season. • Begin ferry operation in the fall or winter, outside of the bird breeding season. If ferry service begins outside of the breeding bird season, breeding birds have the opportunity to adapt to new wave regimes, so that new nests can be constructed above the height of waves generated by ferry traffic. • Artificial lighting from the ferry terminal and associated structures should be angled down and away from the adjacent marsh areas. Prismatic glass coverings and cutoff shields may also be used to prevent light disturbances to the adjacent wetlands. Trash cans should also be covered and emptied frequently so as not to attract aggressive and common competitive species such as California Gull. Loud and abrupt
--	--	--

<p align="center">Nesting Bird Species (cont.)</p>		<p>noises from ferry traffic and ferry terminal automobile traffic should be discouraged in areas adjacent to special status bird species nesting habitat.</p>
<p align="center">Aquatic Species</p>	<p><u>Construction Impacts</u></p> <ul style="list-style-type: none"> • Dredging may damage spawning beds or expose aquatic species to potential harm through an increase in turbidity and potential resuspension of contaminated sediments. • Pile driving may expose fish to harmful levels of acoustic disturbance <p><u>Operational Impacts</u></p> <ul style="list-style-type: none"> • Ferry service operations may impact aquatic species through decreased water quality. 	<ul style="list-style-type: none"> • Applicable work windows (June 1 through December 1) for dredging and pile driving should be followed to protect salmonids and Pacific Herring. • If dredging and pile driving is done outside of appropriate work windows, consultation with NMFS and/or CDFG will be required, and additional mitigation, avoidance, and minimization measures may need to be used. It may also be necessary to conduct additional surveys and conduct construction and dredging activities in aquatic habitat in the presence of a qualified biological monitor. • Appropriate BMPs, such as the use of a silt curtain and appropriate methods to minimize noise during pile driving activities, such as a bubble curtain or vibratory hammer, should be used during dredging to protect fish species from injury or death. • Ferries traveling through Redwood Creek, near Olympia oyster beds, and other areas containing special status aquatic species, should be limited to

<p style="text-align: center;">Aquatic Species (cont.)</p>		<p>speeds that do significantly increase suspended sediment in the water column above current levels.</p> <ul style="list-style-type: none"> • Maintenance of ferries and terminal facilities should be conducted in a manner that reduces the potential for oil, grease, and gasoline spills. Engines used in the ferries should be kept clean and well maintained to reduce the input of oil and gas into the water. • Implementation of a SWPPP will reduce pollutant level entering the tidal waters due to runoff to a less than significant level.
---	--	--

2.0 INTRODUCTION

On March 9, 2007, WRA, Inc. performed a site visit to assess biological resources at the Redwood City Ferry Terminal site in Redwood City, San Mateo County, California (Figure 1). The purpose of the assessment site visit was to gather information necessary to complete an initial review of biological resources in the Project Area. The assessment focused on the site of the preferred ferry terminal location at Westpoint Slough in an area currently occupied by a sand and gravel sorting and storage facility (Project Area), but also evaluated two alternative ferry terminal locations. The landward portions of the Project Area are surrounded by industrial facilities and a business park. Redwood Creek and Westpoint Slough are the major water bodies in the Project Area. Bair Island and Greco Island border the Project Area to the north and east, respectively. This report describes the results of the site visit, which assessed the Project Area and vicinity for the (1) presence of special status species; (2) potential to support special status species; and (3) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also contains an evaluation of potential impacts to special status species and makes recommendations for further study to determine the full extent of impacts that may occur as a result of the Project. Recommendations for minimization and mitigation of impacts are also discussed. Impacts, mitigation, and recommendations for further study are discussed in light of the California Environmental Quality Act and permitting requirements from various federal, state, and local agencies.

A biological assessment provides general information on the potential presence of sensitive species and habitats. The biological assessment is not an official protocol level survey for listed species that may be required for project approval by local, state, or federal agencies. However, specific findings on the occurrence of any species or the presence of sensitive habitats may require that protocol surveys be conducted. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

3.0 PROJECT DESCRIPTION

The Redwood City ferry service would require construction of a terminal dock and associated structures. Structures associated with the Redwood City Ferry will cover approximately five to six acres at build-out and include covered passenger shelters, bus stops, parking lots, and restroom facilities. A sheltered passenger waiting area will be constructed either on the shore or on a fixed pier. Four acres would be required to accommodate parking, plus additional parking and transfer points for three to four buses. The waiting area, besides sheltering patrons, should have space for restrooms, an information kiosk, ticket vending equipment, change machines, telephones, and newspaper vending machines. If space and funding allow, additional modules could include space for concessions or vendors, a small staff office, and a maintenance/operations/storage area.

Initial ferry service operation would consist of approximately 6-10 ferry trips per day to and from San Francisco. An additional route may be eventually added to operate a route servicing the East Bay from Redwood City during peak periods. The maximum level of service anticipated for the Redwood City Ferry terminal would be 28-40 vessel movements per day. Vessels are approximately 116 feet long, 28 feet wide, and have a draft of approximately 6 feet.

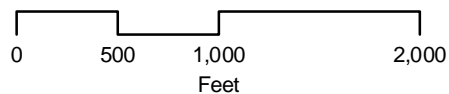
A minimum channel water depth of 10 feet (-10 MLLW) is required for ferry operations and a bottom elevation of -12 feet MLLW is desired within the area of the float. Based on 1995



Figure 1. Project Area Location Map



Redwood City Ferry Terminal
San Mateo County, CA



ENVIRONMENTAL CONSULTANTS

Date: April 2007
 Basemap: USGS Topo Quad
 Map By: Michael Rochelle
 Filepath: I:/Acad2000/16000/16195/gis/
 Arcmap/Location.mxd

contours, an estimated 16,500 cubic yards (CY) of dredged material would need to be removed from Westpoint Slough to facilitate ferry vessel function.

3.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including laws and regulations applicable to the Project Area that were applied to the field investigations and analysis of potential project impacts.

3.1 Special Status Species

Special status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These Acts afford protection to both listed and proposed species. In addition, California Department of Fish and Game (CDFG) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFG special status invertebrates are all considered special status species. Although CDFG Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). In addition to regulations for special status species, most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal. Plant species on California Native Plant Society (CNPS) Lists 1 and 2 are also considered special status plant species. Impacts to these species are considered significant according to CEQA. CNPS List 3 plants have little or no protection under CEQA, but are included in this analysis for completeness.

Critical Habitat

Critical habitat is a term defined and used in the Federal Endangered Species Act as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The FESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the FESA "jeopardy standard." However, areas that are currently unoccupied by the species but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

3.2 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, and riparian habitat. These habitats are regulated under federal regulations (such as the Clean Water Act), state regulations (such as the Porter-Cologne Act, the CDFG Streambed Alteration Program, and CEQA), or local ordinances or policies (City or County Tree Ordinances, Special Habitat Management Areas, and General Plan Elements).

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates “Waters of the United States” under Section 404 of the Clean Water Act. “Waters of the U.S.” are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the *Corps of Engineers Wetlands Delineation Manual* (1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as “other waters” and are often characterized by an ordinary high water line (OHW). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into “Waters of the U.S.” (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

The Corps of Engineers also has jurisdiction over “navigable waters” under Section 10 of the Rivers and Harbors Act of 1899. “Navigable waters of the U.S.,” as defined in 33 CFR Part 329, are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity. The upper limit of a navigable water is at the point along its length where the character of the river changes from navigable to non-navigable, such as at a major fall or rapids. The Corps San Francisco district regulates Section 10 through issuance of Section 10 permits or letters of permission, or through Dredged Material Management Office (DMMO), which serves as a clearinghouse for dredging related permits in the San Francisco Bay. The DMMO includes representatives from the Corps, San Francisco Bay RWQCB, San Francisco BCDC, and, when applicable, the National Marine Fisheries Service (NMFS), USFWS, and CDFG.

Waters of the State

The term “Waters of the State” is defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes “isolated” wetlands and waters that may not be regulated by the Corps under Section 404. “Waters of the State” are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact “Waters of the State,” are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to “Waters of the State,” the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under Sections 1600-1616 of the State Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, “on, or pertaining to, the banks of a stream;” therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG ESD 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

San Francisco Bay and Shoreline

The San Francisco Bay Conservation and Development Commission (BCDC) has regulatory jurisdiction, as defined by the McAteer-Petris Act, over the Bay and its shoreline, which generally consists of the area between the Bay shoreline and a line 100 feet landward of and parallel to the shoreline. Within the Project Area, BCDC has two areas of jurisdiction: San Francisco Bay and the Shoreline Band. These areas are defined in the McAteer-Petris Act (PRC Section 66610) as:

San Francisco Bay, being all areas that are subject to tidal action from the south end of the Bay to the Golden Gate (Point Bonita-Point Lobos) and to the Sacramento River line (a line between Stake Point and Simmons Point, extended northeasterly to the mouth of Marshall Cut), including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; tidelands (land lying between mean high tide and mean low tide); and submerged lands (land lying below mean low tide).

A shoreline band consisting of all territory located between the shoreline of San Francisco Bay as defined above and a line 100 feet landward of and parallel with that line, but excluding any portions of such territory which are included in other areas of BCDC jurisdiction; provided that the Commission may, by resolution, exclude from its area of jurisdiction any area within the shoreline band that it finds and declares is of no regional importance to the Bay.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game (CDFG). CDFG ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in its Natural Diversity Database. Sensitive plant communities are also identified by CDFG on their *List of California Natural Communities Recognized by the CNDDDB*.

Impacts to sensitive natural communities identified in local or regional plans, policies, regulations or by the CDFG or USFWS must be considered and evaluated under CEQA (California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in City or County General Plans or ordinances.

Essential Fish Habitat

Essential Fish Habitat (EFH) is regulated through the National Marine Fisheries Service (NMFS), a division of the National Oceanic and Atmospheric Administration (NOAA). EFH consists of aquatic areas that contain habitat essential to the long-term survival and health of fisheries in the waters of the United States. EFH can include the water column, certain bottom types such as sandy or rocky bottoms, vegetation such as eelgrass or kelp, or structurally complex coral or oyster reefs. The Corps enters into consultation with the NMFS if an aquatic project has the potential to affect EFH.

4.0 METHODS

On March 9, 2007 the Project Area, alternative ferry terminal locations, and the surrounding areas was surveyed by boat and traversed by foot to determine (1) plant communities present within the Project Area, (2) if existing conditions provided suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A.

4.1 Biological Communities

Prior to the site visit, aerial photographs and previous reports concerning the Project Area were examined. The following reports were reviewed:

- Redwood City Ferry Terminal Analysis (Pacific Transit Management Corporation 2000)
- Preliminary Wake Wash Impact Analysis: Redwood City Ferry Terminal (Coast and Harbor Engineering 2007)

When applicable, biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

4.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special status plant or wildlife species and are identified or described in Section 4.1.1 below.

4.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Waters

The Project Area was surveyed to determine if any wetlands and waters potentially subject to jurisdiction by the Corps, RWQCB, or CDFG were present. The assessment was based primarily on the presence of wetland plant indicators, but may also include any observed indicators of wetland hydrology or wetland soils. Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status¹ of OBL, FACW, or FAC as given on the U.S. Fish and Wildlife Service List of Plant Species that Occur in Wetlands (Reed 1988). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, surface sediment deposits, algal mats and drift lines, or indirect indicators (secondary indicators), such as oxidized root channels. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual (Environmental Laboratory, 1987) and Field Indicators of Hydric Soils in the United States (NRCS, 2002).

Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities, including sensitive plant communities recognized by CDFG. If present in the Project Area, these sensitive biological communities were mapped and are described in the Section 4.1.2 below.

Essential Fish Habitat

The Project Area and vicinity was assessed for the presence and potential to support areas that may be considered EFH by the NMFS. Background documentation regarding EFH in San Francisco Bay, such as the Baywide Eelgrass Inventory of San Francisco Bay (CalTrans/NMFS, 2004), was also consulted to determine whether or not the Project Area and vicinity contained known EFH areas.

4.2 Special Status Species

4.2.1 Literature Review

Potential occurrence of special status species in the Project Area was evaluated by first determining which special status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special status species focused on the Redwood Point 7.5 minute USGS quadrangle and the eight surrounding USGS

¹ OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

quadrangles. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- California Natural Diversity Database records (CNDDDB) (CDFG 2007)
- USFWS quadrangle species lists (USFWS 2007)
- CNPS Electronic Inventory records (CNPS 2007)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins, R.C. 2003)
- Fairy Shrimps of California's Puddles, Pools and Playas (Eriksen and Belk 1999)
- University of California at Davis Information Center for the Environment Distribution Maps for Fishes in California (2007)
- National Marine Fisheries Service Distribution Maps for California Salmonid Species (2007)

4.2.2 Site Assessment

A site visit was made to the Project Area to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur in the Project Area was then evaluated according to the following criteria:

1) No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

2) Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

3) Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

4) High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

5) Present. Species is observed on the site or has been recorded (i.e. CNDDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special status species known to occur in the vicinity in order to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special status species is observed during the site visit, its presence will be recorded and discussed. Appendix B presents the evaluation of potential for occurrence of each special status plant and wildlife species known to occur in the vicinity of the Project Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above.

5.0 RESULTS

The Project Area is at the northeastern end of the Port of Redwood City, an industrialized peninsula at the eastern edge of Redwood City, California. A newly constructed business park is located just south of the Project Area, Redwood Creek borders the northern and western sides of the Project Area and Westpoint Slough is located along the eastern side of the Project Area. Bair Island and Greco Island are located to the north and east of the Project Area, respectively. An abandoned pier extends horizontally into the slough from the Project Area. Most of the Project Area is covered in rip rap and industrial debris. Vegetated portions of the Project Area are dominated by weedy, non-native species. A few small patches of tidal wetland vegetation occur on the edges of the Project Area, and, at the eastern border, a wetland ditch flows into Slough from the Industrial site. The following sections present the results and discussion of the biological assessment within the Project Area.

5.1 Biological Communities

Biological communities in the Project Area consist of industrial development, tidal wetlands, and tidal waters (Figure 2). Tidal wetland and tidal water areas are considered sensitive biological communities and industrial development is considered a non-sensitive biological community. Descriptions of each biological community in the Project Area are contained in the following sections.

5.1.1 *Non-sensitive biological communities*

Industrial development

Although not described in the literature, industrial development includes areas that have been developed for industrial uses and may contain some ruderal herbaceous weeds, but are no longer in a natural state. The Project Area is comprised primarily of unvegetated gravel areas, rip rap, and industrial debris. Very limited areas of ruderal herbaceous grassland are present on gravel piles and rip rap along the outer portions of industrial development areas in the Project Area. Plant species observed in industrial development portions of the Project Area include ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), black mustard (*Brassica nigra*), and fennel (*Foeniculum vulgare*). No wildlife species were observed in ruderal herbaceous grassland portions of the Project Area.

Landscaped Park

Although not described in the literature, landscaped park are public spaces for recreational purposes, as well as maintained edges of parking lots and commercial areas. Vegetation in landscaped and park areas often includes ornamental vegetation and may provide some habitat value for more common wildlife species. The Project Area includes a small landscaped recreation area bordering a business center parking lot. Plant species observed in the area included ornamental tree species, and manicured grass. No wildlife were observed in the vicinity of the small recreation area.

5.1.2 *Sensitive Biological Communities*

Tidal wetland

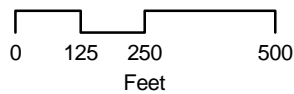
Tidal wetlands occur in areas that are subject to upper ranges of tidal cycles along the edges of



	Project Area
	Industrial Development
	Landscaped Park
	Tidal Waters
	Wetlands

Figure 2. Biological Communities within the Project Area

Redwood City Ferry Terminal
San Mateo County, CA



ENVIRONMENTAL CONSULTANTS

Date: April 2007
 Phot Date: Feb. 27, 2004
 Map By: Michael Rochelle
 Filepath: I:\Acad2000\16000\16195\gis/
 Arcmap/BioCommunities.mxd

large bodies of water. Tidal wetlands in the Project Area are very small and occur as relatively isolated patches, underlain by rip rap and other fill material on disturbed areas of the shoreline. The small size and low habitat quality of these areas makes them different from the larger, more contiguous coastal salt marsh present in surrounding areas such as Bair Island and Greco Island. The smaller, patchier tidal wetlands in the Project Area are lower quality habitat for salt marsh wildlife species and do not provide the other functions of larger salt marshes. Tidal wetlands in the Project Area consist of small patches of pickleweed (*Salicornia virginica*) and Pacific cordgrass (*Spartina foliosa*). Tidal wetlands are subject to Corps jurisdiction under Section 404 of the Clean Water Act, RWQCB jurisdiction under Section 401 of the Clean Water Act and the Porter-Cologne Act, and BCDC jurisdiction under the McAteer-Petris Act. Tidal wetlands are also considered sensitive communities by CDFG.

Tidal waters

Tidal waters are areas that are subject to tidal inundation, but do not support tidal vegetation. These areas include sloughs, coastal creeks and streams, and the San Francisco Bay. Westpoint Slough and Redwood Creek are tidal waters. Tidal waters are subject to Corps jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, RWQCB jurisdiction under Section 401 of the Clean Water Act and the Porter-Cologne Act, and BCDC jurisdiction under the McAteer-Petris Act. CDFG also regulates activities in tidal waters through the CEQA process. Corps Section 404 jurisdiction in tidal waters extends upwards to the elevation of the High Tide Line (HTL). Corps Section 10 jurisdiction extends to the elevation of Mean High Water (MHW). BCDC jurisdiction extends 5 feet higher than the Mean Tide Level (MTL) in areas that are not salt marsh, plus a 100 foot shoreline band. Table 2 shows the elevations relevant to Corps and BCDC jurisdiction in the Project Area.

Tidal Elevation	Elevation in feet Mean Lower Low Water (MLLW) datum	Elevation in feet National Geodetic Vertical Datum 1929 (NGVD)¹	Elevation in feet North American Vertical Datum 1988 (NAVD)¹
MLLW	0.00	-4.13	-1.48
MTL	4.39	0.26	2.91
MHW ²	7.59	3.46	6.11
MTL + 5 feet ³	9.39	5.26	7.91
HTL ⁴	9.59	5.46	8.11

1. Estimated based on superseded tidal benchmark data for Redwood City compared to current tidal benchmark data from the Dumbarton Bridge.
2. Upper elevation of Corps Section 10 jurisdiction. Impacts below this elevation for this project would be covered under Section 10 permits.
3. Elevation of BCDC jurisdiction. BCDC jurisdiction also includes the shoreline band, which extends 100 feet landward of this elevation.
4. Upper elevation of Corps Section 404 jurisdiction. Impacts between the HTL and MHW would be covered under a Corps Section 404 Individual Permit.

5.1.3 Biological Communities at Bair Island and Greco Island

Bair and Greco Islands are part of the USFWS Don Edwards National Wildlife Refuge, and are comprised of a mix of northern coastal salt marsh, tidal sloughs, no native annual grassland, and

coastal strand communities. Northern coastal salt marshes are wetland communities usually found along sheltered inland margins of bays, lagoons, and estuaries. Typical species found in northern coastal salt marsh are saltmarsh dodder (*Cuscuta salina*), spikerush (*Eleocharis paryula*), alkali heath (*Frankenia salina*), gumplant (*Grindelia stricta*), pickleweed, and Pacific cordgrass (Holland 1988). Tidal sloughs not containing wetland vegetation flow throughout northern coastal salt marsh communities on Bair and Greco Islands. Non-native annual grassland on Bair and Greco Islands occur in areas that are above the elevations of tidal waters, and thus are not subject to regular inundation or saturation by the tides. Coastal strand consists of areas that are comprised of sand or other beach material and contain little or no wetland vegetation. Portions of the outer edges of eastern Bair Island are comprised of coastal strand communities. Northern coastal salt marsh and tidal sloughs are considered sensitive biological communities. Coastal strand communities on Bair Island may provide nesting habitat for special status bird species such as Western Snowy Plover (*Charadrius alexandrinus nivosus*) and California Least Tern (*Sterna antillarum browni*). Non-native annual grassland portions of Bair and Greco Island provide upland refugia habitat for special status wildlife species such as salt marsh harvest mouse (*Reithrodontomys raviventris*) and California Clapper Rail (*Rallus longirostris obsoletus*).

5.1.4 Essential Fish Habitat

Tidal waters in the Project Area and vicinity may be used by Pacific herring (*Clupea pallasii*) as foraging and breeding habitat, and steelhead (*Oncorhynchus mykiss irideus*) and chinook salmon (*Oncorhynchus tshawytscha*) as a migration corridor and/or rearing habitat. In addition, known populations of the native Olympia oyster (*Ostreola conchaphila*) are present in Westpoint Slough and near Bair Island (NOAA 2004). Portions of the Project Area and vicinity that support these species are considered EFH. Although elevations within the Project Area are suitable for eelgrass, there is little potential that it occurs there. Conditions within Redwood Creek and Westpoint Slough are very turbid, and there are very few sheltered cove areas. Eelgrass in San Francisco Bay seldom occurs in areas with a large amount of freshwater input because these areas tend to be very turbid, reducing light availability, making it difficult for eelgrass to survive. Eelgrass is not very common in south San Francisco Bay, possibly due to higher turbidity than is present in northern portions of the Bay. The closest known eelgrass bed is in Foster City, approximately 4.5 miles from the Project Area (Caltrans/NMFS, 2004).

5.2 Special Status Species

Special status plant and wildlife species known to occur, or with a moderate or high potential to occur in the Project Area and surrounding areas are discussed below. Special status plant and wildlife species with occurrences documented by the CNDDDB in and adjacent to the Project Area are shown on Figure 3. Appendix B contains a table evaluating the potential for plant and wildlife species found in the background data research to occur in the Project Area and vicinity. Special status species known to occur or with the potential to occur on Bair and Greco Islands were also evaluated due to potential operational impacts of ferry service operations.

5.2.1 Plants

Based upon a review of the resources and databases given in Section 2.3.1, 51 special status plant species have been documented in the vicinity of the Project Area. The Project Area has the potential to support four of these species. Appendix B summarizes the potential for occurrence for each special status plant species occurring in the vicinity of the Project Area. No special status plant species were observed in the Project Area during the assessment site visit. Four of the

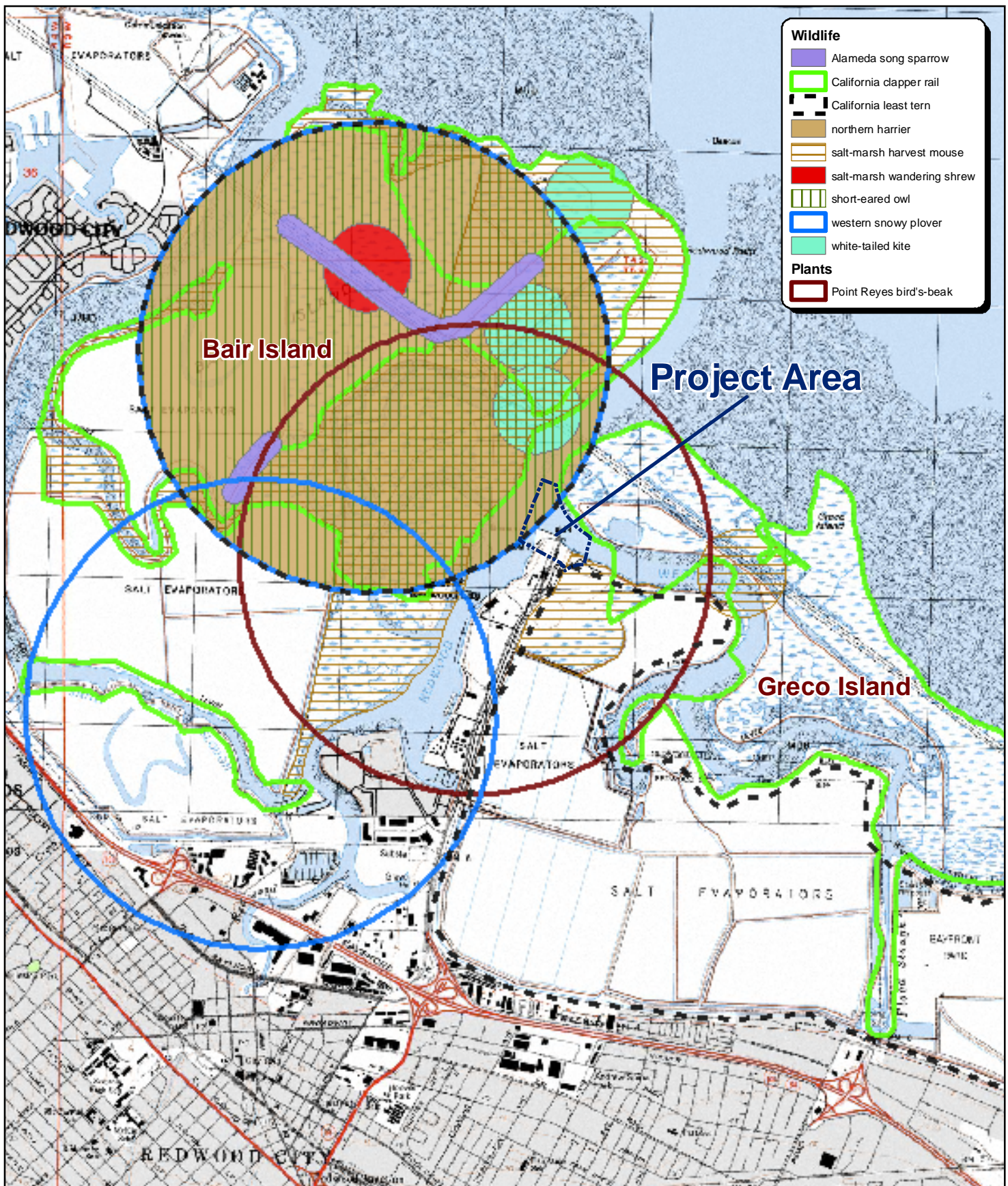


Figure 3. Special Status Plant and Wildlife Species Known to Occur in and Adjacent to the Project Area

Redwood City Ferry Terminal
San Mateo County, CA



ENVIRONMENTAL CONSULTANTS

Date: April 2007
 Basemap: USGS Topo Quad
 Map By: Michael Rochelle
 Filepath: I:/Acad2000/16000/16195/gis/
 Arcmap/BioCommunities.mxd

special status plant species have a moderate potential to occur in the Project Area. The remaining species documented to occur in the vicinity of the Project Area are unlikely or have no potential to occur. Special status plant species that are most likely (high or moderate potential) to occur in the Project Area are discussed below.

Special Status Plant Species with the Potential to Occur in and Adjacent to the Project Area:

California seablite (*Suaeda californica*). Federally endangered, CNPS List 1B. California seablite is a shrub that occurs in marshes and swamps, and along the margins of coastal salt marshes at elevations between 0-300 meters. It blooms July to October. Suitable habitat for the species may occur along the ruderal edges of small wetland patches in the Project Area. This species has a moderate potential to occur in and adjacent to the Project Area.

coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*). CNPS List 1B. Coastal marsh milk-vetch is a perennial herb that occurs in coastal salt marshes and coastal dunes, and along streams at elevations of 0-30 meters. It blooms April through October. Suitable habitat for the species may occur along the ruderal edges of small wetland patches in the Project Area. This species has a moderate potential to occur in and adjacent to the Project Area.

Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*). CNPS List 1B Species. Point Reyes bird's beak is an annual herb that occurs in coastal marshes at elevations from 0-15 meters. It blooms between June and October. The species usually occurs in association with pickleweed, salt grass, and cordgrass. The coastal wetlands in the Project Area have these associated species present and may provide suitable habitat for Point Reyes bird's beak. This species has a moderate potential to occur in and adjacent to the Project Area.

saline clover (*Trifolium depauperatum* var. *hydrophilum*). CNPS List 1B. Saline clover is an annual herb that occurs in marshes and swamps in mesic and alkaline soils at elevations of 0-300 meters. It blooms April to June. Suitable habitat for the species may occur in the small wetland patches in the Project Area. This species has a moderate potential to occur in and adjacent to the Project Area.

The site assessment did not occur during the blooming periods of the four special status plant species with a potential to occur in the Project Area.

5.2.2 Wildlife

Sixty special status species of wildlife have been recorded in the vicinity of the Project Area. Appendix B summarizes the potential for each of these species to occur in the Project Area. Two special status wildlife species were observed in the Project Area during the site assessment: Long-billed Curlew (*Numenius americanus*) and Northern Harrier (*Circus cyaneus*). An additional 28 special status wildlife species have the potential to occur in or adjacent to the Project Area. Special status wildlife species that were observed, or have the potential to occur in or adjacent to the Project Area are discussed below.

The upland portions of the Project Area may contain a limited amount of foraging habitat for some special status wildlife species, but upland areas do not contain suitable long term or nesting habitat for any special status wildlife species. However, Bair Island and Greco Island provide habitat for a variety of special status wildlife species. The tidal waters and wetlands in the Project Area and vicinity also contain potential breeding and foraging habitat for some special status wildlife species.

Mammalian Species

Pallid bat (*Antrozous pallidus*). **CDFG Species of Special Concern.** This species occupies a variety of habitats including low elevation annual and perennial grasslands, shrublands, valley oak woodland, and forests. The pallid bat typically roosts in rock outcrops, mines, caves, hollow trees, buildings, and bridges. The pallid bat forages on arthropods typically close to the roost site. This species has the potential to roost in buildings or other man made structures within and adjacent to the Project Area, and may forage in the Project Area.

Salt Marsh Harvest Mouse, (*Reithrodontomys raviventris*), (Federal and State Endangered, Fully Protected) The salt marsh harvest mouse is restricted to the salt and brackish water marshes adjoining San Francisco Bay and its tributaries. Two subspecies (*Reithrodontomys raviventris raviventris* and *R. r. halicoetes*) have been described. The southern subspecies *R. r. raviventris* has a disjunct distribution, with a small population at Corte Madera, Marin County, quite near the Gallinas Creek populations of the northern subspecies. Additionally, there is a population near Point San Pedro in northwestern Contra Costa County. However, this subspecies is mostly restricted to a band extending from Belmont, San Mateo County, on the San Francisco Peninsula to the Newark area in Alameda County. The largest area of appropriate marsh in this band is near its eastern end in the Newark area (Shellhammer 1982). The salt marsh harvest mouse uses pickleweed as its primary habitat, but non-submerged, salt-tolerant vegetation (such as gumplant or coyote brush) for escape during the highest tides is essential. The value of the habitat increases with the depth and density of pickleweed, and the degree of intermixing with fat hen (*Atriplex triangularis*) and alkali heath (Shellhammer 1982). This species has been documented to occur near the Project Area in Flood Slough and on Bair and Greco Islands (CDFG 2007). No suitable habitat for this species is present in the Project Area.

Salt Marsh Wandering Shrew (*Sorex vagrans halicoetes*), (CDFG Species of Special Concern) The saltmarsh wandering shrew is a CDFG species of special concern and historically inhabited all saltmarshes from the east shore of San Pablo Bay to Alviso and along the west shore of south San Francisco Bay. Extant populations now remain along the southeast shore of Bair Island, north of Corkscrew Slough, along the north bank of Mowry Slough, Dumbarton Point along the Southern Pacific elevated train tracks, and near the levee bordering the north portion of the marsh at the mouth of Alameda Creek (Josselyn et al. 1991). Saltmarsh wandering shrew inhabits the middle and higher elevation of salt marshes. The species relies heavily on dense vegetation (especially pickleweed) for cover and refugia (Williams 1986). The saltmarsh wandering shrew has been documented to occur in the tidal marshes near Ravenswood Point (CDFG 2007) and is likely to occur on Greco and Bair Island. This species is not likely to occur in the Project Area.

Pacific Harbor Seal (*Phoca vitulina richardsi*), (Marine Mammal Protection Act) In the San Francisco Bay region, seals have been observed as far upstream as Grizzly Island, but little regular use seems to be evident currently north of the Corte Madera marshes. Numerous haul-out sites or rest areas are used, some only at certain tides. Historically, there was a large rookery, or pupping site, near Alviso (Skinner 1962), but currently only two major pupping sites are known. One is the Castro Rocks, under the Richmond-San Rafael bridge and almost completely inundated at high tides. The most significant breeding location in the South Bay is Mowry Slough across the bay from the Project Area (Riseborough et al. 1980). The harbor seal is protected by the Marine Mammal Protection Act of 1973. Harbor seals use the open bay for feeding and travel. An average of two haul-out sites, or rest areas, are used each day (Harvey and Torok 1995), with such sites located at least 300 meters from regular human disturbances. Haul out sites are common in areas of heavy boat traffic. A haul-out site used for pupping, or rookery, must be protected from

human and domestic animal disturbance. A haul-out site is generally considered a rookery if there are pups present at the site. Haul-out sites are generally located on islands and along the margins of tidal sloughs (Lidicker 1997).

Bair and Greco Islands are haul out and rookery sites for pacific harbor seals (Lidicker 1997). At Bair Island, seals use haul-outs on the outer shore of Outer Bair Island, and several sites within Corkscrew Slough. The primary haul-out in Corkscrew Slough is along the west bank of the slough, near the bend closest to Redwood Creek. Secondary sites (used at high tide) are across from the primary site (on the east bank), and west of the middle of the slough, along the north bank. The primary site is used moderately (maximum of 20 seals in 1992), and pups have been recorded there (Kopeck and Harvey 1995). Seal numbers during spring/breeding season have reached 350 adults and 100 pups, with 5 to 70 seals observed during the non-breeding season (CDFG 2002). Harbor seals were observed foraging in Redwood Creek during the site visit, and may venture into Westpoint Slough in the Project Area. The Project Area is unlikely to be used as a haul out.

Avian Species

American White Pelican (*Pelecanus erythrorhynchos*), nesting (CDFG Species of Special Concern) The American White Pelican is a late summer/fall migrant and winter visitor (July-December) in the San Francisco Estuary, locally common on large open water areas such as bays, lakes, salt ponds, and diked habitats. This pelican feeds in water of various depths, dipping for prey items from the surface. Prey consists almost entirely of fish. The nesting habitat consists of large freshwater and saltwater lakes, usually on small islands or remote dikes. The nest site must be flat or gently sloping, lacking shrubs or other obstructions that would impede taking flight, and free of human disturbance (Zeiner et al. 1990). Suitable breeding habitat exists on nearby Bair and Greco Islands, and the species may forage in the tidal waters of the Project Area.

California Brown Pelican (*Pelecanus occidentalis californicus*), nesting and communal roosts (Federal Endangered, State Endangered, CDFG Fully Protected) California Brown Pelican breeding colonies range from Mexico north to the Channel Islands. Post-breeding individuals disperse along the coast south to Central America and north to Vancouver Island (Cogswell 1977, Palmer 1978). Basic habitat requirements for this species include isolated undisturbed offshore rocks or islands with a good marine fishery in the vicinity. Post-breeding dispersal finds individuals along the entire California coast, including San Francisco Bay and other estuaries that provide open water habitat with abundant prey. California Brown Pelican may occasionally use the tidal waters in and adjacent to the Project Area for foraging and resting during the non-breeding season. Suitable breeding habitat exists on nearby Bair and Greco Islands.

Double-crested Cormorant (*Phalacrocorax auritus*), rookery site (CDFG Species of Special Concern) The Double-crested Cormorant is a year-long resident along the entire coast of California and on inland lakes, in fresh, salt, and estuarine waters (Zeiner et al. 1990). In California it formerly bred on coastal cliffs and offshore islands along the coast from Marin County to La Jolla, and in the interior in northeastern California, the Sacramento and San Joaquin Valleys, and the Salton Sea (Grinnell and Miller 1944). Presently, Double-crested Cormorant breed in scattered locations throughout coastal and central California. Double-crested Cormorant nest in fresh, brackish, and saltwater areas across North America (USFWS 1992). These birds nest in trees, rocky slopes, and islands, and have also been noted to nest on artificial structures such as the San Francisco-Oakland Bay Bridge and transmission towers adjacent to the San Mateo Bridge (USFWS 1992). Double-crested Cormorant are the only one of the three cormorant species in the western United States that occurs on fresh water and is also the most common on large bays such as San

Francisco Bay. This species forages in the Bay and was observed in the tidal waters in and adjacent to the Project Area during the site visit. A Double-crested Cormorant rookery colony is present on Bair Island (CDFG, 2007).

Cooper's Hawk (*Accipiter cooperii*), nesting, (CDFG Species of Special Concern) This hawk is associated with woodland and forest habitats throughout California. Although nest sites are usually found in isolated areas, this species frequently occurs in urban habitats. This species may forage in uplands in the Project Area, but is not likely to nest there.

Northern Harrier (*Circus cyaneus*), nesting, (CDFG Species of Special Concern) The Northern Harrier occurs in California from annual grassland up to lodgepole pine and alpine meadow habitats. They are a permanent resident of the northeastern plateau and coastal areas; less common resident of the Central Valley (Zeiner et al. 1990). The Northern Harrier is a common year-round resident and, to a lesser extent, winter visitor in the marshes and grasslands of the San Francisco Bay Area. The species breeds from the mid-latitudes of the United States north to Canada and Alaska, generally moving south to winter in the southern states. The Harrier prefers foraging habitat consisting of tidal salt, brackish, and freshwater marshes, diked seasonal and freshwater wetlands (including vernal pools), salt ponds, grasslands, and agricultural lands (USFWS 1992). These hawks nest in the dense grass and brush vegetation often at the water's edge. As ground nesters, they are highly vulnerable to predation by gulls and various mammals and to trampling by deer and cattle. Nesting in moist areas and by water makes nests susceptible to flooding (Martin 1989). This species was seen soaring over Bair Island during the site visit and is known to nest on Bair Island (CDFG, 2007).

White-tailed Kite (*Elanus caeruleus*), (CDFG Fully Protected) The White-tailed Kite is a year-long resident in coastal and valley lowlands and marshy bottomlands in California. The kite inhabits herbaceous and open stages of most habitats mostly in cismontane California (CDFG 1990). The kite forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands (Zeiner et al. 1990). White-tailed Kite use substantial groves of dense, broad-leaved deciduous trees for nesting and roosting. They nest near open foraging areas. The kite makes its nest of loosely piled sticks and twigs and lined with grass, straw, or rootlets. The nest is placed near top of dense oak, willow, or other tree stand (Zeiner et al. 1990). This species may forage in the Project Area and has been documented to nest on Bair Island (CDFG 2007). No suitable nesting habitat is present within the Project Area.

Osprey (*Pandion haliaetus*), CDFG Species of Special Concern. Ospreys feed on fish; therefore, they are associated with oceans, bays, rivers, lakes, and large ponds where suitable prey is available. This species typically nests on a platform of sticks at the top of large snags, dead-topped trees, on cliffs, or on human-made structures. This species may forage in tidal waters of the Project Area, but no suitable nesting habitat is present in the Project Area.

Merlin (*Falco columbarius*), wintering, (CDFG Species of Special Concern) The Merlin is widely distributed in the Northern Hemisphere. In California, Merlin are uncommon winter migrants from September to May. This falcon could potentially be observed anywhere in the San Francisco Bay region, but in very small numbers. In migration, Merlin frequent open habitats at low elevations near water and tree stands, usually favoring coastlines, lakeshores, and wetlands (Zeiner et al. 1990). There are no documented occurrences of the Merlin in the Project Area, however, the species may occasionally forage in the Project Area during migration.

Prairie Falcon (*Falco mexicanus*), nesting (CDFG Species of Special Concern). The Prairie Falcon is found throughout most of western North America. In California, it is an uncommon permanent resident and migrant that ranges from the southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada (Zeiner et al. 1990). Prairie Falcon are associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas. In the San Francisco Bay region, it may occur in winter or during migration over annual grassland, wetlands, or any other open terrain. There are no documented occurrences of Prairie Falcon in the Project Area, however, the species may forage and rest in the Project Area during migration.

American Peregrine Falcon (*Falco peregrinus anatum*), (State Endangered, CDFG Fully Protected) The American Peregrine Falcon is found along the west coast of North America from Oregon south to Baja California. Its range includes most of California during migrations and during the winter. The breeding range includes the Channel Islands, coastal areas, the North Coast, Klamath, and Cascade Ranges, and the Sierra Nevada. Breeding habitat generally includes high cliffs in coastal or forested habitats, however, some pairs nest on city buildings and bridges. In winter and during migration, Peregrine Falcon may occur in any habitat where concentrations of prey species (shorebirds or waterfowl) occur. This species may forage in the Project Area, but no suitable nesting habitat is present.

California Black Rail (*Laterallus jamaicensis coturniculus*), (State Threatened, CDFG Fully Protected) Historically, the range of the California Black Rail extended along the coast from Tomales and San Francisco Bays and the Sacramento-San Joaquin Delta south into northern Baja California and east into the interior of southern California (Grinnell and Miller 1944). Currently, the California Black Rail is restricted to the tidal marshes of San Francisco Bay, the outer coast of California at Tomales, Bolinas, and Morro Bays, and the interior marshes associated with the Colorado River, the Salton Sea, and the All American and Coachella canals in the Imperial Valley. They are virtually absent from the marshes of central and south San Francisco Bay during the breeding season, although these areas may be used during the winter. Populations are currently concentrated in north San Francisco Bay, especially in the tidal marshes of the San Pablo Bay and associated rivers. The California Black Rail usually occurs in upper tidal zone of emergent wetlands or brackish marshes dominated by bulrush (*Scirpus* spp.), cordgrass, and pickleweed, usually nesting in dense cover such as pickleweed (Eddelman et.al., 1994). The nearest documented Black Rail occurrence is in Belmont Slough (CDFG 2007). There is no suitable habitat for this species in the Project Area, however, this species may occur on Greco and Bair Islands.

California Clapper Rail (*Rallus longirostris obsoletus*), (Federal and State Threatened, CDFG Fully Protected) The California Clapper Rail is found primarily in the San Francisco Bay Area, including San Pablo Bay and Suisun Marsh. In South San Francisco Bay, rail populations presently occur in remnant salt marshes such as Bair and Greco Islands (San Mateo County), Dumbarton Point and Mowry Slough (Alameda County), and in Santa Clara County. Clapper Rail can also be found in marshes fringing the South Bay outboard of salt evaporation pond levees and along major tidal sloughs. The California Clapper Rail usually nests in the low portions of coastal wetlands and tidal sloughs dominated by cordgrass, pickleweed, and gumplant. Clapper Rail are not likely to use the Project Area, however, Clapper Rail are known to occur on Greco Island and Bair Island (CDFG 2007). The Invasive Spartina Project (ISP) conducted surveys for the Clapper Rail the south side of Westpoint Slough in 2006 and detected no rails.

Western Snowy Plover (*Charadrius alexandrinus nivosus*), (Federal Listed Threatened, CDFG Species of Special Concern) The Western Snowy Plover breeds on the Pacific coast from southern Washington to southern Baja California and inland as far as Kansas. Western Snowy

Plover are resident throughout most of their range, except on the Pacific Coast where they are resident only as far north as the San Francisco Bay area. However, breeding populations of Western Snowy Plover have been observed with both resident and migratory components. Inland nesting areas occur at the Salton Sea, Mono Lake, and at isolated sites on the shores of alkali lakes in northeastern California, in the Central Valley, and southeastern deserts (Jurek and Leach 1973, Garrett and Dunn 1981). Western Snowy Plover utilize expanses of dry, flat sand that are above the levels of typical high tides during their entire life cycle. They have also been known to utilize the shores and levees of salt ponds, alkaline lakes and salt flats when in landlocked portions of their range (Bent 1929). Breeding habitat consists of open, bare-ground islands that are predator free. Western Snowy Plover have high breeding-site fidelity, but some movement occurs between sites within and between years (Stenzel et al. 1994; Page et al. 1995; Powell et al. 1995). In addition, there is site fidelity associated with wintering areas (Page et al. 1995; A. Powell, U.S. Geological Survey, San Diego, California, unpublished data). This species may forage in the Project Area. Middle Bair Island is known breeding habitat for this species (CDFG 2007), and the species has the potential to nest on the beaches along outboard margins of Bair Island.

Long-billed Curlew (*Numenius americanus*), nesting (CDFG Species of Special Concern)

The Long-billed Curlew breeds on the interior prairies and wet meadows of North America; the species winters primarily along the California coast and interior valleys. Curlew are found throughout the San Francisco Bay region in winter, with small numbers of non-breeders remaining on the coast in summer. Long-billed Curlew occur in tidal marshes and on intertidal mudflats. This large shorebird will use high marsh, levees, and salt ponds for roosting during high tides. Long-billed Curlew occur in tidal marshes and sloughs adjacent to the Project Area. This species was observed during the site visit on the mudflats adjacent to the Project Area.

California Gull (*Larus californicus*), nesting colony, (CDFG Species of Special Concern)

California Gull are widely distributed in the western United States. The preferred habitats of California Gull along the coast are sandy beaches, mudflats, rocky intertidal, and pelagic areas of marine and estuarine habitats, as well as fresh and saline emergent wetlands. This species nests on isolated islands in salt ponds in south San Francisco Bay (Rigney and Rigney 1981). California Gull likely forage in tidal marshes and on intertidal mudflats adjacent to the Project Area and may occur in the Project Area as well.

Black Skimmer (*Rynchops niger*), nesting colony, (CDFG Species of Special Concern)

Western populations of Black Skimmer breed from Southern California (inland at Salton Sea, along coasts in San Diego and Orange Counties) south to Nayarit, Mexico (Am. Ornithol. Union 1983) with small numbers breeding in San Francisco Bay. The Black Skimmer has a large bill with orange base and black tip and is unique for having its lower mandible longer than the upper. It feeds on fish and aquatic invertebrates by skimming its lower mandible along the surface of a waterbody. This bird normally breeds in colonies arriving in late April. It lays 4-5 eggs on the ground. It withdraws from the northern part of its breeding range in winter to the Southern United States and South America. This species may forage in tidal waters in the Project Area. Suitable breeding habitat exists on Bair and Greco Islands, but not in the Project Area.

California Least Tern (*Sterna antillarum browni*), (Federal and State Endangered, CDFG Fully Protected)

The California Least Tern historically nested on coastal sandy beaches from the Pajaro River mouth and Moss Landing (Santa Cruz and Monterey counties), where it occurred as recently as 1956, southward into northern Baja, Mexico (Grinnell and Miller 1944, Atwood et al. 1979, Carter et al. 1990). California Least Tern winter mostly south of the United States. Breeding colonies are located in southern California along marine and estuarine shores, and in San

Francisco Bay in abandoned salt ponds and along estuarine waters. The California Least Tern currently nests at scattered locations, including the Alameda Naval Air Station and the Oakland International Airport (Alameda County). In previous years, nesting occasionally occurred at Bair Island, the Redwood City salt evaporators (east of the Project Area), salt evaporators in the Baumberg area, and west of Coyote Hills (Alameda County) (Atwood et al. 1979, Carter et al. 1990). California Least Tern forage for fish over open water and salt evaporators. Nesting colonies require flat areas with little or no vegetation, mixed sand or shell or other loose substrate, freedom from disturbance, and nearness to shallow water with abundant small fish. Multiple occurrences have been documented for this species in the past on Bair Island (CDFG 2007). This species may forage in the tidal waters of the Project Area, and may nest on beaches at the outboard margins of Bair Island.

Short-eared Owl (*Asio flammeus*), (CDFG Species of Special Concern) Short-eared Owl are found throughout North America, Eurasia, and South America. In California they occur year round in the northern portion of the state and as winter visitors farther south. The present status of this species in the San Francisco Bay region is difficult to determine due to insufficient data. Short-eared Owl inhabit annual and perennial grasslands, prairies, dunes, meadows, irrigated lands and fresh- to saltwater wetlands where they commonly feed upon voles and other small mammals (Bent 1938). They nest on dry ground in a small bare or sparsely vegetated depression. The species is known to occur at Bair Island (CDFG 2007), and likely occurs at Greco Island. The Project Area may provide foraging habitat for this species, but no nesting habitat is present in the Project Area.

Western Burrowing Owl (*Athene cunicularia*) (CDFG Species of Special Concern). The Western Burrowing Owl breeds in open country from the western Great Plains to California. The Western Burrowing Owl typically favors flat, open grassland or gentle slopes, sparse-shrub land ecosystems, or disturbed and abandoned areas containing debris piles and old pipes. In California, Burrowing Owl are found in close association with California ground squirrels (*Spermophilus beecheyi*). Burrowing Owl exhibit high site fidelity and usually use the abandoned burrows of ground squirrels for shelter and nesting. This species could nest in ground squirrel burrows at Bair and Greco Island. However, no suitable habitat is present in the Project Area due to the level and consistency of human disturbance.

Loggerhead Shrike (*Lanius ludovicianus*), (CDFG Species of Special Concern) The Loggerhead Shrike is found throughout the United States. In California, it is a common resident and winter visitor in lowlands and foothills. Shrike prefer open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. In the San Francisco Bay region it is most often encountered in annual grassland and agricultural areas. This species may forage and nest in the Project Area.

California Horned Lark (*Eremophila alpestris actia*) (CDFG Species of Special Concern) This species is found in grasslands in much of California, outside of forested and heavily vegetated areas. The California Horned Lark is a ground nester found in grasslands, lakes, meadows, scrub and agricultural fields throughout much of California. This species may forage and nest in the Project Area.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*), (CDFG Species of Special Concern) The Saltmarsh Common Yellowthroat occurs in the marshes of San Francisco and San Pablo Bays and along the central coast of California. The breeding range extends from Tomales Bay, Marin County, south to San Jose and east into Suisun Bay (Foster 1977). Breeding season

surveys have located Saltmarsh Common Yellowthroat in eight of the nine San Francisco Bay area counties, including Marin, Sonoma, Napa, Solano, Alameda, San Francisco, San Mateo, and Santa Clara counties (Foster 1977, Hobson et al. 1986). Contra Costa County is the only Bay Area county where breeding yellowthroat were not located. Saltmarsh Common Yellowthroat occur in tidal salt marshes, brackish marshes, riparian vegetation, and adjacent upland habitats. They are often found on levees that have a dominant cover of coyote brush and/or fennel and other ruderal vegetation. Nests are located in grass tussocks, low herbaceous vegetation, cattails, tules, and shrubs to approximately five feet above the ground (Shufford 1993). The Saltmarsh Common Yellowthroat is unlikely to occur in the Project Area but may occur in the tidal wetlands and upland vegetation along Westpoint Slough and Redwood Creek, and in the tidal marshes of Bair and Greco Islands.

Alameda Song Sparrow (*Melospiza melodia pusillula*), (CDFG Species of Special Concern)

The Alameda Song Sparrow is a resident of salt and brackish marshes of south San Francisco Bay north to Redwood City on the west and Albany on the east (USFWS 1992). The habitat utilized by the Alameda Song Sparrow includes pickleweed marshes supporting gumplant, and adjacent uplands covered with coyote brush, annual grasses, and ruderal vegetation. Territories are typically associated with tidal sloughs, creeks, or the bayshore (Grinnell and Miller 1944). Nests are located under low, dense vegetation, usually near water, in emergent vegetation, or in other moist sites. The Alameda Song Sparrow may occur in the Project Area and in the tidal wetlands and upland vegetation of Westpoint Slough and Redwood Creek, and in the tidal marshes of Bair and Greco Islands.

Fish Species

The nearest available potential freshwater spawning habitat for fish species to the Project Area is Redwood Creek, whose tidally influenced portion flows through the Project Area. Limited information on fish species exists for this watershed, however, nearby occurrences for salmonid species in San Francisquito Creek, to the east of the Project Area, and current distribution maps (Moyle 2002) were taken into account to determine the potential for the species listed below to occur in the aquatic habitat adjacent to the Project Area.

River Lamprey (*Lampetra ayresi*), (CDFG Species of Special Concern) This anadromous river lamprey is found in coastal streams from San Francisco Bay to the Taku River and Lynn Canal, Alaska (Moyle, 2002). The river lamprey is a parasitic anadromous species. Like the salmon, the lamprey starts life in rivers, migrates to the sea, then returns upstream to spawn. The larval form of the lamprey (ammocete) lives in river sediments for 5 to 6 years. This species has been found in both upper (above dam) and lower Sonoma Creek indicating that some river lamprey may spend their entire life in fresh water (UC Berkeley Digital Library Project 2006). Nearby sloughs and the San Francisco Bay may provide foraging habitat while adjacent freshwater tributaries, such as Redwood Creek, may provide spawning habitat. South San Francisco Bay is within the known distribution of this species (Moyle, 2002).

Pacific herring (*Clupea pallasii*). Pacific herring is a coastal marine fish that uses large estuaries for spawning and early rearing habitat. Though this species is not listed as a sensitive species, it is of note because it is an important commercial fishery species in San Francisco Bay. On the basis of spawning biomass (i.e., an estimate of the number of spawning fish), the San Francisco Bay estuary is the most important spawning area for eastern Pacific populations of the species (CDFG, 2002). Pacific herring supports a commercial fishery, primarily for roe (herring eggs) but also for fresh fish, bait and pet food. In the Bay, the Pacific herring fishery is the last remaining

commercial finfish fishery (BIES 2003). The peak spawning period in San Francisco Bay and Tomales Bay is from January to March (Miller and Schmidtke 1956). This species may occur and may spawn in the Project Area and vicinity.

Steelhead-Central California Coast steelhead (*Oncorhynchus mykiss irideus*), (Federal Threatened). The Central California Coast ESU 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. Steelhead typically migrate to marine waters after spending two years in freshwater, though they may stay up to seven. They then reside in marine waters for 2 or 3 years prior to returning to their natal stream to spawn as 4-or 5-year-olds. Steelhead adults typically spawn between December and June. In California, females typically spawn two times before they die. Preferred spawning habitat for steelhead is in perennial streams with cool to cold water temperatures, high dissolved oxygen levels and fast flowing water. Abundant riffle areas (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding. San Francisquito Creek, approximately six miles to the southeast of the Project Area, contains a known population of steelhead. The aquatic habitat adjacent to the Project Area most likely provides rearing and foraging habitat for this species. Insufficient information exists to assess the historical distribution and current status of salmonids in the Redwood Creek watershed (Leidy, 1984). Therefore, it is unknown whether or not steelhead migrate through the tidal areas of Redwood Creek near the Project Area to spawn upstream.

Chinook Salmon - Central Valley Fall/late fall-run ESU (*Oncorhynchus tshawytscha*), (CDFG Species of Special Concern.) The Central Valley Fall/late fall-run ESU includes all naturally spawned spring-run populations from the Sacramento/San Joaquin River mainstem and its tributaries, however, individuals have been recorded in a number of South Bay streams including the Guadalupe River, Alameda Creek and Coyote Creek with spawning documented in the Guadalupe River and Coyote Creek (Leidy, 1999). The great majority of late-fall chinook salmon appear to spawn in the mainstem of the Sacramento River, but some chinook salmon have been observed in the South Bay. The aquatic habitat adjacent to the Study Area may provide rearing and foraging habitat, though recent studies show little estuarine dependency for this species. Adults observed in the aquatic habitat adjacent to the Study Area would most likely be strays from the nearby Guadalupe River or Coyote and Alameda Creeks. These individuals, in turn, are thought to be strays from hatchery releases into the Bay (Leidy, 1984).

Longfin Smelt (*Spirinchus thaleichthys*), (CDFG Species of Special Concern) Adults occur seasonally as far downstream as South Bay, but they are concentrated in Suisun, San Pablo, and North San Francisco Bays (Moyle 2002). This species is anadromous, with spawning occurring from October to December in freshwater streams close to the ocean. In the San Francisco estuary, the center of their distribution gradually moves down the estuary during the summer (Moyle 2002). This species has been collected near the mouth of Redwood Creek by the Marine Science Institute (MSI, 2000).

Invertebrates

Olympia Oyster (*Ostreola conchaphila*), (Essential Fish Habitat). Though native oysters are not listed as a sensitive species, they are included in Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary for fish spawning, breeding, feeding or growth to maturity by the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C.

1802 (10)). Native oysters are included as EFH because they increase the quality of EFH for groundfish, pelagic fish and salmonids by improving water quality and benefitting both the pelagic and benthic food webs. The waters in Westpoint Slough and off Bair Island contain native oyster beds (NOAA 2004).

6.0 POTENTIAL IMPACTS, MITIGATION MEASURES AND RECOMMENDATIONS FOR FURTHER STUDY

The majority of the preferred ferry terminal location is already developed and is located adjacent to an active industrial cement plant. As a result, much of the Project Area has little habitat value for most sensitive plant and animal species. However, the Project Area is in close proximity to the protected salt marsh complexes on Bair and Greco Islands, thus increasing the potential for impacts to sensitive species occurring on the islands. Potential impacts to these species can be divided into two categories: temporary in nature and related to the actual construction of the terminal (Construction Related Impacts) or long term and related to the every day operation of the ferry and ferry terminal (Operational Impacts). Details regarding the potential impacts of the proposed project are explained below.

6.1 Sensitive Biological Communities

The only sensitive biological communities observed in the Project Area were tidal wetlands and waters. Additional tidal wetlands and waters are present at Bair Island and Greco Island. Potential Essential Fish Habitat in the Project Area and vicinity includes oyster beds and eelgrass. Potential impacts of the proposed Project, potential mitigation measures, and recommendations for further study are discussed below.

6.1.1 Tidal Wetlands and Waters

Construction Related Impacts and Mitigation

Construction related impacts to tidal wetlands and waters may occur due to 1.) placement of fill in tidal wetlands and waters; and 2.) dredging required to create depths suitable for ferry navigation and docking. Existing tidal wetlands and waters are shown in Figure 2. It is recommended that a formal delineation of jurisdictional wetlands and waters be performed and submitted to the Corps for verification. A verified delineation is required prior to or concurrent with any application to dredge or place fill in jurisdictional wetlands or waters. As explained in detail in Appendix C, avoidance of tidal wetlands and areas above MHW would greatly reduce the requirements and cost of obtaining permits for the Project.

Potential impacts to tidal wetlands and waters could occur if construction of the ferry terminal, ferry dock, and related facilities such as parking and other related infrastructure occurs in areas where wetlands and waters currently exist. The extent of these impacts, if any, is not yet clear because the terminal and dock design have yet to be finalized. The construction of the ferry terminal in the Project Area would require that dredging of approximately 16,500 cubic yards in the tidal waters of Westpoint Slough. This is considered an impact to areas within Corps, RWQCB, BCDC, and CDFG jurisdiction. Piles installed in tidal waters to support ferry docking facilities would also be considered an impact.

Dredging and the potential placement of fill in tidal wetlands and waters are actions that require permits from the Corps, RWQCB, BCDC, and CDFG. If the Project is designed so that

dredging and pile driving is the only impact to Corps, RWQCB, BCDC, and CDFG jurisdictional areas, all permitting may be able to be accomplished through a single permit application with the Dredged Materials Management Office (DMMO). If tidal wetlands are impacted or if tidal waters above the elevation of MHW are impacted through dredging or pile driving, separate permits may be required for each of the above listed agencies.

If tidal wetlands and waters above the elevation of MHW are impacted by the Project, a Section 404 Individual Permit will be needed from the Corps, and Water Quality Certification will be needed from the RWQCB, and a BCDC Permit will be needed. Mitigation wetlands and waters will need to be created at a minimum of a 1:1 ratio to compensate for impacts to existing wetlands. Wetland mitigation could be accomplished by on-site wetland creation, off-site wetland creation, or purchase of tidal wetland creation credits in a mitigation bank². Wetland creation will require submission of a Wetland Mitigation and Monitoring Plan, which includes conceptual wetland mitigation plans, location of the proposed wetland creation, and monitoring methods for a minimum of 5 years.

All dredging, pile driving, and other in water construction work activities will need to adhere to applicable dredging work windows contained in the Long Term Management Strategy for the Placement of Dredged Material in the in the San Francisco Bay Region (LTMS) unless formal consultation with USFWS, CDFG, and/or the NMFS determines that in-water work will not significantly affect nesting California Clapper Rail, migrating steelhead, and Pacific Herring breeding. Conducting work within the LTMS dredging work windows would mean that all in water work (dredging and pile driving) be conducted between September 1 and December 1. If USFWS determines through a Section 7 consultation that dredging and pile driving will not result in impacts to California Clapper Rail, work may be conducted between June 1 and December 1. However, USFWS may require pre-construction surveys and may place limitations on work areas based on these surveys if work is conducted prior to September 1. Preparation of a Sediment Analysis Plan and testing of the sediments in the proposed dredging area are currently required by the DMMO to ensure that dredged sediment can be safely disposed of at a suitable location.

Under CEQA, additional construction related impacts may occur from the potential introduction of non-native invasive species into the Project Area by construction equipment, and from potential construction related water pollution. The non-native invasive species smooth cordgrass (*Spartina alterniflora*) is known to occur at Bair and Greco Islands. Seed and pollen of this species may be introduced from construction equipment. To prevent the introduction of seed and pollen, construction equipment may need to be cleaned thoroughly to remove non-native seeds. In addition, post-construction monitoring of the Project Area may be necessary to ensure that no non-native species have been introduced. Control of non-native spartina is accomplished most effectively through cooperation with the Invasive Spartina Project (ISP). ISP operate yearly eradication programs throughout the San Francisco Bay to control smooth cordgrass in a coordinated effort. Construction related water pollution can be managed through the implementation of an approved Stormwater Pollution Prevention Plan (SWPPP) containing BMPs to reduce potential construction related impacts to water quality.

²No tidal wetland mitigation banks with service areas that include the Project Area are currently known to exist. However, this does not preclude the use of mitigation bank credits should a mitigation bank come online prior to project construction.

Operational Impacts and Mitigation

Bair and Greco Islands contain extensive areas of salt marsh that could be impacted due to increased wave erosion as a result of ferry operation. However, based on the wave and wake modeling analysis performed by Coast and Harbor Engineering (2007), operation of the ferry is not expected result in measurable shoreline erosion at Bair and Greco Islands. Therefore, the increased waves and wakes from ferry service is not expected to result in significant impacts to tidal wetlands and waters at Bair and Greco Island.

The only operational impact from long term operation of the ferry terminal is maintenance dredging. Similar to new dredging, maintenance dredging will require that permits be obtained from the Corps, BCDC, RWQCB, and CDFG through application to the DMMO. Maintenance dredging will be required to follow LTMS work windows as described above. The Port of Redwood City hosts boat traffic that have the potential to introduce non-native invasive species to the area. The non-native invasive species smooth cordgrass (*Spartina alterniflora*) is known to occur at Bair and Greco Islands. Increased boat traffic in the area as a result of ferry operations may increase the potential for introduction of this species in the Project Area through spread of seeds and pollen. Post-construction monitoring of the Project Area may be necessary to ensure that no non-native species become established in the Project Area. Control of non-native spartina is accomplished most effectively through cooperation with the Invasive Spartina Project (ISP). ISP operate yearly eradication programs throughout the San Francisco Bay to control smooth cordgrass in a coordinated effort.

6.1.2 Essential Fish Habitat

Construction Related Impacts and Mitigation

Impacts to essential fish habitat could occur if oyster beds or eelgrass is present in tidal waters that will be impacted by the ferry dock or dredging. Although it is not likely that eelgrass or oyster beds are present in the Project Area, it is recommended that eelgrass surveys and benthic invertebrate surveys be conducted to determine if either of these species are present in the Project Area and dredging footprint. The eelgrass survey will need to be conducted within the eelgrass growing season, generally between May and September. Because the surveys conducted as part of this study occurred outside of this period, they were not adequate to determine conclusively that eelgrass is not present in the area. Eelgrass and benthic invertebrate surveys may be conducted concurrently. Previous eelgrass and/or benthic invertebrate surveys may have been conducted by the Westpoint Marina during permitting.

If oyster beds or eelgrass are found in the Project Area or dredging footprint, it is recommended that the project dredging or dock alignment be designed to avoid these areas if feasible. Although it is possible to create and restore eelgrass and oyster beds, it is a costly and time consuming process. If avoidance of the eelgrass and/or oyster beds is not feasible, then any eelgrass or oyster beds located within the area of disturbance for the project will need to be transplanted to suitable nearby habitat areas. If eelgrass and/or oyster beds are present within the Project Area or dredging footprint, pre-construction surveys will be conducted within 60 days prior to the start of dredging or construction to determine the extent of eelgrass or oyster beds that will be impacted. Eelgrass or oysters within the area of disturbance will need to be transplanted prior to construction or dredging.

Operational Impacts and Mitigation

If oyster beds are present in areas along the proposed ferry route, oyster beds and eelgrass may be affected due to increased turbidity, decreased water quality, and wave and wake impacts. The first step in analyzing this impact is to conduct surveys for oysters and eelgrass in intertidal and subtidal areas along Bair and Greco Islands. If oyster beds and eelgrass is found in these areas, further wave and wake analysis should be conducted to determine if ferry operation would increase turbidity or wave and wake to levels that would result in impacts to oyster beds or eelgrass. If it is determined that ferry operation may impact eelgrass or oyster beds along the ferry route, ferry speeds should be adjusted so that turbidity and wave impacts do not cause impacts to these species. Alternatively, oyster beds and eelgrass may be transplanted as described above under construction related impacts.

5.2.2 Potential Impacts to Special Status Species

6.2 Special Status Species

6.2.1 Special Status Plants

Although not highly likely to occur in the area due to disturbed conditions, four special status plant species; California seablite, coastal marsh milk-vetch, Point Reyes bird's beak, and saline clover, have the potential to occur in the small tidal wetland portions of the Project Area. If these species are present and the Project resulted in impacts to these species, it would be a significant impact.

To determine if these species are present in the Project Area, protocol level rare plant surveys are recommended during the blooming periods for these species. Two surveys, one in May and one in September are recommended to determine the presence or absence of these species. If special status plant species are found within the Project Area during these surveys, the species should be avoided if possible. If avoidance of these species is not possible, the special status plant species should be transplanted to suitable habitat areas using techniques most suited for the species based on best available science. This may include seed collection, transplantation, or other appropriate methods.

6.2.2 Special Status Wildlife Species

Construction Related Impacts

Construction related impacts to special status wildlife species are primarily related to noise and potential introduction of pollutants during dredging and construction of the dock and ferry terminal. No construction related impacts are expected to occur to salt marsh harvest mouse and salt marsh wandering shrew. These species require large areas of dense pickleweed habitat, and the Project Area does not contain suitable habitat. Loss of potential foraging habitat for special status avian species that may forage in uplands in the Project Area is not considered a significant impact due to the low quality of the habitat available and the abundance of higher quality habitat in surrounding areas. Construction related impacts to foraging habitat in tidal waters in the Project Area are also less than significant because they will be temporary in nature and there is an abundance of foraging habitat in surrounding areas. Construction of the ferry terminal will not result in a significant post-construction change in tidal foraging habitat in the Project Area. No structures with the potential to host roosting bats are located within the construction area. The only structure that would be removed is the existing old pier. The old pier is not suitable bat roost habitat due to the close proximity to the ground

and open structure.

Dredging, pile driving, and ferry terminal construction may result in impacts to Pacific harbor seal, California Clapper Rail, California Black Rail, river lamprey, Pacific herring, steelhead, chinook salmon, and longfin smelt due to visual and acoustic disturbance or potential water quality impacts. Potential impacts to these species can be avoided or mitigated by implementation of measures designed to reduce or eliminate impacts.

Pacific Harbor Seal

Pacific harbor seals are known to use Bair Island as a haul out site. However, the duration of this study was not long enough to determine the locations of these haul out sites. Further monitoring of harbor seals in the area is recommended to determine if haul out sites are located in proximity to the Project Area. NMFS considers underwater sound pressure levels at or above 160 dB re 1 μ Pa to result in harassment to marine mammals. In addition, visual and acoustic disturbance during construction may affect the behavior of Pacific harbor seals if haul out sites are located within 300 meters of construction. NMFS may require monitoring of haul out sites by a qualified marine mammal monitor during construction activities. If harbor seals are determined to be affected by construction activity, construction methods may need to be modified as needed to reduce or eliminate the source of disturbance. The Service may also require a marine mammal Incidental Harassment Authorization Permit for potential disturbances to the seals. Levels of acoustic disturbance from activities such as pile driving should be kept lower than 160 decibels, the limit recommended by the NMFS for the protection of marine mammals. Specific measures to lessen acoustic disturbance may include the following: use of a bubble curtain, use of vibratory devices instead of impact hammers for piles, use of a cushioning block on the pile driver or dampening the pile driving sound by encasing the piles with a larger, hollow pipe filled with air during installation.

California Clapper Rail and California Black Rail

California Clapper Rail and California Black Rail are known to nest on Bair and Greco Islands. If dredging or pile driving work is conducted within 250 feet of California Clapper Rail or California Black Rail nesting habitat, the work should adhere to established dredging work windows for areas within 250 feet of rail habitat. Work windows for Clapper Rail allow dredging and pile driving between September 1 and February 1. Combined with the dredging work windows for salmonids, this means that all dredging and pile driving activities would need to be conducted between September 1 and December 1. If it is not possible to conduct dredging and pile driving between September 1 and December 1, surveys may be conducted for nesting rails with approval from NMFS. If no rails are found following the surveys, dredging and pile driving may occur between June 1 and December 1 with approval of NMFS. If nesting rails are found within 250 feet of the work area, work may need to be postponed until the young have fledged from the nest.

Other Nesting Birds

Northern Harrier, Black Skimmer, and Short Eared Owl have the potential to nest in proximity to the Project Area. These and other breeding birds are covered under the MBTA, and disturbance that results in the abandonment of an active migratory bird nest is considered a significant impact. Breeding birds can use buildings, bare ground, grass, shrubs or trees as nesting habitat. If building removal or ground disturbance is to take place within the breeding bird season (February through August), surveys for active nests should be completed within

one month prior to the onset of any grading or construction activities. If an active nest is observed, an exclusion buffer of 50 to 500 feet (depending on the species and location and in consultation with CDFG) around the nest is recommended. Most common passerine birds are afforded a 50 foot buffer while more sensitive species may require up to 500 feet. The exclusion buffer should be maintained until the nesting period has ended. These bird surveys would not be necessary if building removal and initial ground disturbance occurred between September and January, outside of the bird breeding season.

Aquatic Species

River lamprey, Pacific herring, steelhead, chinook salmon, and longfin smelt are all either known to occur or have the potential to occur in the Project Area and dredging footprint. Available information indicates peak underwater sound pressure levels greater than 180 decibels regarding 1 micropascal may physically injure small fish, including special status fish species (NOAA2005). Dredging may damage spawning beds or expose aquatic species to potential harm through an increase in turbidity and potential resuspension of contaminated sediments. In order to avoid potential impacts to special status aquatic species, NOAA/NMFS provides work windows for activities such as dredging and pile driving in San Francisco Bay. The appropriate work window for salmonid species in the south bay is June 1st through November 30th. This work window incorporates the Pacific herring work window, which is March 1st through November 30th. Appropriate Best Management Practices, such as the use of a silt curtain to prevent sediment from entering the water column will protect spawning beds from siltation and protect fry from disturbance by increased turbidity and dredging activity. Levels of acoustic disturbance from activities such as pile driving should be kept lower than 180 decibels through use of a bubble curtain, use of vibratory devices instead of impact hammers for piles, use of a cushioning block on the pile driver or dampening the pile driving sound by encasing the piles with a larger, hollow pipe filled with air during installation. If dredging and pile driving is done outside of appropriate work windows, consultation with NMFS and/or CDFG will be required, and additional mitigation, avoidance, and minimization measures may need to be used. It may also be necessary to conduct additional surveys and conduct construction and dredging activities in aquatic habitat in the presence of a qualified biological monitor.

Operational Impacts and Mitigation Measures

Operation of the ferry has the potential to impact Northern Harrier, California Black Rail, California Clapper Rail, Western Snowy Plover, Black Skimmer, California Least Tern, and Short Eared Owl, Pacific harbor seal, and special status aquatic species through wave and wake impacts, acoustic disturbance, visual disturbance, and water quality changes as a result of ferry operations. A Section 7 consultation with the USFWS will likely be required during the permitting process to determine the extent of impacts and mitigation measures for these federal listed species.

Increased boat traffic as a result of ferry operations may also impact the behavior of common waterfowl species, such as Surf Scoter (*Melanitta perspicillata*) and Bufflehead (*Bucephala albeola*), and may impact the foraging behavior of special status avian species present in the Project Area and vicinity. However, these impacts are not significant due to the presence of ample habitat for these species in nearby areas. Ferry operations are also not expected to result in significant wave and wake impacts to salt marsh harvest mouse and salt marsh wandering shrew. These species occur primarily on the interior of marshes, and are able to escape high wave action by climbing vegetation.

Pacific Harbor Seal

Increased ferry traffic also has the potential to disturb Pacific harbor seal haul out sites on Bair Island. Although harbor seals often occur in areas that have a high degree of human presence and boat traffic, seals on Bair Island are not currently accustomed to the level of boat traffic that would be present following the start of ferry activity. The increased ferry traffic may cause visual and acoustic disturbance to the seals at their haul out sites. If the increased disturbance resulted in permanent abandonment of the area as a haul-out, it would be a significant impact. To avoid potential impacts to Pacific harbor seal haul out areas, it is recommended that ferry service maintain a distance of at least 30 meters from known haul out sites. In addition, it is recommended that loud and abrupt noises (such as sudden engine noise or horn blasts) not be made within 300 meters of harbor seal haul out areas.

If surveys for Pacific harbor seal haul out site locations determine that haul out sites are located near the Project Area, increased nighttime lighting at the ferry terminal may result in visual disturbance to harbor seals. To prevent potential impacts due to artificial lighting, lights at the ferry terminal and associated structures should be angled down and away from the adjacent marsh areas. Prismatic glass coverings and cutoff shields may also be used to prevent light disturbances in adjacent areas. To minimize acoustic disturbance to harbor seals, loud and abrupt noises from ferry traffic and ferry terminal automobile traffic should be discouraged in areas adjacent to Pacific harbor seal haul out areas.

Special Status Avian Species

Wave and wake impacts could occur to Northern Harrier, California Black Rail, California Clapper Rail, Western Snowy Plover, Black Skimmer, California Least Tern, and Short Eared Owl through nest inundation and increased lighting. Nest inundation impacts on these species are dependant on the existing wave conditions in the Project Area and vicinity, and the change in existing conditions that may occur as a result of ferry operation. If the operation of ferries do not change the wave and wake conditions beyond that which occurs under existing conditions, there will be no impact to nesting special status avian species. Impacts to nesting avian species may also be avoided if ferry service begins operation in the fall or winter, outside of the bird breeding season. If ferry service begins outside of the breeding bird season, breeding birds have the opportunity to adapt to new wave regimes, so that new nests can be constructed above the height of waves generated by ferry traffic.

It is not known if Western Snowy Plover and/or California Least Tern are present or has the potential to nest at the beaches along the outboard portion of Bair Island. It is therefore recommended that these beaches be monitored for the presence of these species and for the presence of suitable nesting habitat. If conditions are suitable for Western Snowy Plover and/or California Least Tern nesting at these beaches, there may be impacts to this species as a result of wave runup. However, if existing tides during the nesting season completely inundate these beaches, they would not be considered suitable habitat for nesting Western Snowy Plover or California Least Tern, and no impacts to these species would be anticipated.

The previous wave and wake baseline analysis (URS 2004) showed measured vessel wakes with maximum wave heights during the breeding season of approximately 0.42 meters, with an associated wave period of approximately 3.3 seconds. Vertical runup elevation from this wave would be approximately 0.3 meters on a beach with a 10:1 slope (personal communication with Scott Fenical, Coast & Harbor Engineering, 2007). The maximum vertical runup predicted using the same methodology for the 408-passenger Mendocino ferry at high speed for wave

height 0.39m and period 4.5 seconds would be approximately 0.3 meters. This runup is very similar to the existing vessel traffic runup, even if the Mendocino were to operate at 35 knots near Bair and Greco Islands. Wind-waves typically have significant wave heights of 0.2m (maximum waves therefore 0.36m assuming a Rayleigh distribution of wave heights in the spectrum) approximately one day per year based on wind/tide statistics (personal communication with Scott Fenical, Coast & Harbor Engineering, 2007). At this wave height, depending on the wind direction the typical peak wave periods are in the range of 3-4 seconds, which would create maximum vertical runup of approximately 0.2-0.3 meters.

These data indicate that future ferry operations may not result in changes to existing wave conditions. However, further study may be necessary to determine more conclusively whether or not impacts will occur. The previous study by URS does not give the location of the wave measurements, and does not give information regarding the wave height along the outboard portion of Bair Island. In addition, further analysis regarding the potential effects of increased frequency of boat traffic on nesting special status species may also be required. To conclusively determine existing wave conditions, a study of existing conditions focused on wave and wake height during the nesting season (between February and September) at select locations in suitable nesting habitat along the ferry route should be performed. The study should include an analysis of wave and wake height and frequency in these suitable nesting areas. Once this study has been completed, an analysis of wave and wake height that would be generated by the ferry vessel that will be used to service the ferry terminal should be conducted to determine if wave and wake heights will significantly affect nesting special status avian species. Ferry speeds may need to be adjusted so that wave and wake does not significantly change from existing conditions.

Alternatively, survey data for special status species at existing ferry terminals, such as at the Larkspur terminal, could also be examined to determine whether or not ferry operations are affecting nesting habitat for these species. If this data does not already exist, it may need to be collected through surveys in suitable nesting habitat during the nesting season. If these studies determine that existing ferry operations are not affecting the nesting behavior of special status avian species in surrounding marsh habitat, it can be reasonably determined that ferry operations will not affect nesting special status species at Bair and Greco Islands. However, even if these studies determine that existing ferry traffic is not affecting nesting habitat for these species, the USFWS may still require further study of Bair and Greco Islands as described above.

Increased nighttime lighting at the ferry terminal may result in visual disturbance to special status avian species. To minimize these impacts, artificial lighting from the ferry terminal and associated structures should be angled down and away from the adjacent marsh areas. Prismatic glass coverings, cutoff shields, or other methods to minimize lighting impacts may also be used to prevent light disturbance in adjacent areas. Trash cans should also be covered and emptied frequently so as not to attract aggressive and common competitive species such as California Gull. To minimize acoustic disturbance to special status species, loud and abrupt noises from ferry traffic and ferry terminal automobile traffic should be discouraged in areas adjacent to special status bird species nesting habitat.

Aquatic Species

Operation of the ferry following Project construction could result in impacts to aquatic species through impacts to water quality. Ferry operations could result in increased turbidity, increased resuspension of contaminated sediments from prop and wake wash, increased input of oil and

fuel into the Bay from daily operation, and increased potential for accidental fuel spill. Species that may be impacted include: Olympia oysters, river lamprey, steelhead and longfin smelt as well as Pacific herring, a fish species of commercial importance. To reduce impacts that may occur as a result of water quality degradation, the following measures should be implemented.

Ferries traveling through Redwood Creek, near Olympia oyster beds, and other areas containing special status aquatic species, should be limited to speeds that do not significantly increase suspended sediment in the water column above current levels. Maintenance of ferries and terminal facilities should be conducted in a manner that reduces the potential for oil, grease, and gasoline spills. Engines used in the ferries should be kept clean and well maintained to reduce the input of oil and gas into the water. Implementation of a SWPPP will reduce pollutant level entering the tidal waters due to runoff to a less than significant level. These and other mitigation measures developed as part of the water quality analysis under CEQA would be sufficient to bring potential impacts to aquatic species as a result of water quality to a less than significant level.

7.0 ANALYSIS OF ALTERNATIVE FERRY TERMINAL LOCATIONS

Two alternative locations for the ferry terminal occur along Redwood Creek: adjacent to Wharf #5 (Alternative Location 1) and Conference Center/Portside (Alternative Location 2). Alternative Location 1 and Alternative Location 2 are located approximately 0.7 mile and 1.0 mile, respectively, south on Redwood Creek from the Project Area (Figure 1). All three of the proposed ferry terminal locations are developed and in use by either public, commercial, or industrial enterprises. As a result, potential impacts at the Alternative Locations are similar to those in the Project Area.

7.1 Sensitive Biological Communities

Alternative Location 1 does not contain any tidal wetlands. A small tidal wetland area is present along the armored shoreline of Alternative Location 2. Construction of the ferry terminal at Alternative Location 2 may impact tidal wetlands. If this occurred, the measures outlined in Section 6.1.1 could be implemented to reduce impacts to a less than significant level.

Both of the Alternative Locations may require some dredging, pile driving, or other placement of fill material into tidal waters. These activities would impact tidal waters, and be subject to the provisions contained in Section 6.1.1.

Operational impacts to tidal wetlands and waters and Essential Fish Habitat as described above are applicable to both alternative locations as well. Additional surveys and measures outlined in Section 6.1.1 and 6.1.2 could be implemented to quantify, avoid, minimize and mitigate for these impacts.

Due to the armored shoreline conditions at both Alternative Locations, the introduction of non-native invasive species is less likely than for the Project Area. However, the potential to introduce smooth cordgrass does remain at the Alternative Locations. Because construction of the ferry terminal at either of the Alternative Locations does have the potential to introduce non-native invasive species, the ferry terminal at either location would likely require monitoring as described in Section 6.1.1.

7.2 Special Status Species

No special status plant species are likely to occur along the armored shoreline of either Alternative Location 1 or Alternative Location 2. Therefore, no impacts to special status plant species are likely to occur as a result of ferry terminal construction at these locations.

At the alternative locations, potential bird nest and bat roost sites vary depending on available nesting and roosting habitat. Visual, acoustic and aquatic impacts to the surrounding slough and marsh areas would be comparable to impacts associated with the Project Area. However, the distance of the ferry terminals from Bair Island at each of the alternative locations may minimize indirect impacts such as lighting effects. In relation to Greco Island, both Alternative Locations have minimal construction and operations impacts. However, positioning the two alternatives further south on Redwood Creek would potentially increase the linear area of eastern Bair Island affected by operational impacts by approximately 0.7 and 1.0 miles. Operational impacts potentially affected Bair Island would include marsh acoustic and visual disturbance by the ferry, ferry wake wave disturbance, turbidity, and resuspension of sediment. In addition, use of the alternative locations would require the ferry to travel an extra approximate 1.4 to 2.0 miles per round trip. In contrast, commuters would be required to travel additional distance in their vehicles to the preferred alternative. The consumption of fossil fuels by both methods of transportation have the potential to negatively impact the air and water quality of Redwood Creek and the surrounding Bay.

In conclusion, the impacts and mitigation measures for special status species at the Alternative Locations are not likely to be significantly different from impacts and mitigation measures for the Project Area.

8.0 REFERENCES

- American Ornithologists' Union 1983. Check-list of North American birds, 6th ed. Am. Ornithol. Union, Lawrence, KS.
- Atwood, J.L., F.A. Erickson, P.R. Kelly, and P. Unitt. 1979. California least tern census and nesting survey, 1978. Final Rep., Calif. Dep. Fish and Game, Endangered Wildl. Program, E-W-2, Nongame Wildl. Invest., Job V- 2.13.
- The Bay Institute Ecological Scorecard (BIES), October 17, 2003. San Francisco Bay Fish Index. <http://www.bay.org/Scorecard/Fish.pdf>
- Bent, A.C. 1938. Life Histories of North American birds of prey. Part 2. U.S. Natl. Mus. Bull. 170. 412 pp.
- California Department of Fish and Game. Environmental Services Division (ESD). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.
- California Department of Fish and Game (2002) Pacific herring commercial fishing regulations. Final Supplemental Environmental Document. California Department of Fish and Game, SCH No. 98052052.

- California Department of Fish and Game. 2007. Natural Diversity Database, Wildlife and Habitat Data Analysis Branch. Sacramento.
- California Native Plant Society. 2007. Electronic Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society, Sacramento, California.
- Caltrans and NMFS, 2004. Baywide Eelgrass Inventory of San Francisco Bay. Prepared by Merkel and Associates. October 2004.
- Carter, H.R., D.L. Jaques, G.J. McChesney, G.S. Strong, M.W. Parker, and J.E. Takekawa. 1990. Breeding populations of seabirds on the northern and central California coasts in 1989 and 1990. USFWS and PRBO. October 1990.
- CHS Consulting Group. Redwood City Ferry Terminal-Project Description. March 20, 2007.
- Cogswell, H. and G. Christman. 1977. Water birds of California. Berkeley: University of California Press. 399 p.
- Eddleman, W.R., R.E. Flores, and M.L. Legare. 1994. Black Rail (*Laterallus jamaicensis*). In The Birds of North America, No. 123 (A. Poole and F. Gill eds). Philadelphia: The Academy of Natural Sciences; Washington, D.C: The A.O.U.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.
- Fenical, Scott (Coast and Harbor Engineering). 2007. Personal communication regarding existing wave height in the vicinity of proposed ferry route.
- Foster, M.L. 1977. Status of the salt marsh yellowthroat *Geothlypis trichas sinuosa* in the San Francisco Bay Area, California, 1975-1976. California Department of Fish and Game.
- Garrett, K., and J. Dunn. 1981. Birds of southern California. Los Angeles Audubon Soc. 408 pp.
- Green, D.E., Grigg, E., Allen, S., and H. Markowitz, 2001. Monitoring the Potential Impact of the Seismic Retrofit Construction Activities at the Richmond San Rafael Bridge on Harbor Seals (*Phoca vitulina*): May 1998-August 2001. Final Interim Report. August.
- Grinnell, J., and A.H. Miller. 1944. The distribution of the birds of California. Pac. Coast Avifauna. No. 27. Cooper Ornithol. Club, Berkeley, 608 pp.
- Hickman, J.C. (ed.) 1993. The Jepson manual: higher plants of California. University of California Press.
- Hobson, K., P. Perrine, E.B. Roberts, M.L. Foster, and P. Woodin. 1986. A breeding season survey of salt marsh yellowthroats *Geothlypis trichas sinuosa* in the San Francisco Bay Region. U.S. Fish and Wildlife Service, Contract No. 84-57.

- Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Prepared for the California Department of Fish and Game, Sacramento, California
- Information Center for the Environment (ICE). 2007. Distribution Maps of Fishes in California. Department of Environmental Science and Policy, University of California, Davis, California. <http://ice.ucdavis.edu/aquadiv/fishcovs/fishmaps.html>
- Jennings, Mark R. 2004. An Annotated Check List of Amphibians and Reptile Species of California and Adjacent Waters. Third, revised edition. California Department of Fish and Game.
- Josselyn, M., D. Kopec, J. Callaway, and J. Haas. 1991. Bair Island ecological reserve operations and maintenance plan. Final Draft Rep. for CDFG, Yountville, CA.
- Jurek, R.M. and H.R. Leach. 1973. California shorebird survey, 1970-71. Calif. Dep. Fish and Game. Proj. Final Rep., Federal Aid in Wildl. Restor. Proj. W-54-R.
- Kopec, D. and Harvey, J. (1995) Toxic pollutants, health indices, and population dynamics of harbor seals in San Francisco Bay, 1989-91: a final report. Technical publication. Moss Landing, CA: Moss Landing Marine Labs.
- Leidy, R.A. 1984. Distribution and ecology of stream fishes in the San Francisco Bay drainage. *Hilgardia* 52(8).
- Lidicker, W.Z. 1997. Harbor seal (*Phoca vitulina richardi*). In: San Francisco Bay Area Wetlands Ecosystem Goals Project, Amphibians, Reptiles and Mammals Narratives.
- Marine Science Institute (MSI). 2000. Species collected January through June 2000 near entrance to Redwood creek using a 15-foot Otter Trawl and Peterson bottom samplers.
- Martin, J.W. 1989. Raptor status reports-harriers and kites. Pages 83-91 *In Proc. West. Raptor Manage. Symp. and Workshop, Natl. Wildl. Fed., Washington, D.C.*
- Miller, D. J. and J. Schmidtke. 1956. Report on the distribution and abundance of Pacific herring (*Clupea pallasii*) along the coast of Central and Southern California. *California Fish and Game* 42(3):163-187.
- Moyle, P. B. 2002. Inland fishes of California. Revised and expanded. University of California Press, Berkeley, CA. xv + 502 pp
- National Oceanic and Atmospheric Administration (NOAA). 1996. Notices – Marine Mammals: Incidental taking; authorization letters, etc. Vandenberg AFB, CA; Titan II and IV launch vehicles, 10727. *Federal Register* 61(52) p. 107.
- National Oceanic and Atmospheric Administration (NOAA). 2005a. San Francisco Bay Project

- Impact Evaluation System—Pile Driving. Coastal Restoration and Protection Division. Interactive GIS mapping software available online at <http://mapping.orr.noaa.gov/website/portal/pies/piledriving.html> Accessed April 20, 2005.
- National Oceanic and Atmospheric Administration (NOAA). NOAA Restoration Center, San Francisco Bay Oyster Restoration, Updated February 23, 2004. <http://mapping.orr.noaa.gov/website/portal/subtidal/pdfs/oysterreflist.pdf>
- National Oceanic and Atmospheric Administration (NOAA). National Marine Fisheries Service distribution maps for California Salmonid species. April 2007. <http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Maps/Index.cfm>
- Natural Resources Conservation Service (NRCS). 2002. Field Indicators of Hydric Soils in the United States, version 5.0. G.W. Hurt, P.M. Whited, eds. USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.
- Page, G.W., J.C. Warriner and P.W.C. Paton 1995. Snowy Plover (*Charadrius alexandrinus*). In The Birds of North America, No. 154 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union, Washington D.C.
- Powell, A.N. 1995. Western Snowy Plover Use of State Managed Lands in San Diego County. Bird and Mammal conservation Plan report 96-03.
- Palmer, R.S. 1978. Handbook of North American birds. Vol. 1: loons through flamingos. Yale University Press, New Haven, Conn., 521 pp.
- Reed, Jr., Porter B. 1988. National List of Plant Species That Occur in Wetlands: National Summary. U.S. Fish & Wildlife Service. Biol. Rep. 88 (24). 244 pp.
- Rigney, M., and T. Rigney. 1981. A breeding bird survey of the South San Francisco Bay salt pond levee system. U.S. Dep. Inter., Fish and Wildl. Serv., San Francisco Bay Natl. Wildl. Refuge Special Rep. 130 pp.
- Skinner, J.E. 1962. An historical review of the fish and wildlife resources of the San Francisco Bay area. Water Projects Branch Rep. No. 1, California Department of Fish and Game; 226 pp.
- Stebbins, R.C. A Field Guide to Western Reptiles and Amphibians, 3rd Edition. 2003. The Peterson Field Guide Series, Houghton Mifflin Company, New York.
- Stenzel, L. E., J. C. Warriner, J. S. Warriner, K. S. Wilson, F. C. Bidstrup, and G. W. Page. 1994. Long-distance breeding dispersal of snowy plovers in western North America. *Journal of Animal Ecology* 63:887-902.
- U.S. Fish and Wildlife Service. 1992. Status and trends report on wildlife of the San Francisco estuary. San Francisco Estuary Project, U.S. Fish and Wildlife Service, Sacramento Field Office.

- U.S. Fish and Wildlife Service. 2001. Western Snowy Plover (*Charadrius alexandrinus nivosus*) Pacific Coast Population Draft Recovery Plan. Portland, Oregon. xix + 630 pp.
- U.S. Fish and Wildlife Service.. April 2007. Quadrangle Species Lists, Sacramento Fish and Wildlife Service.
- UC Berkeley Digital Library Project 2006. River Lamprey - *Lampetra ayresi* (Gunther). Life History.
- URS Corporation. June 2003. Environmental Impact Report. Expansion of Ferry Transit Service in the San Francisco Bay Area. Final Program. Technical Appendix Wake D.
- Williams, D. F. 1986. Mammalian species of special concern in California. Calif. Dep. Fish and Game, Sacramento. Admin. Rep. 86-1. 112 pp.
- Wylie, E. A. May 17, 2003 letter to Water Transit Authority, EIR Comments.
- Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White. 1990. California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento.

APPENDIX A

LIST OF OBSERVED PLANT AND ANIMAL SPECIES

Wildlife Species	
Common Name	Scientific Name
Pie-billed Grebe	<i>Podily podiceps</i>
Clark's Grebe	<i>Aechmophorus</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Great Egret	<i>Ardea alba</i>
Mallard	<i>Anas platyrhynchos</i>
American Widgeon	<i>Anas americana</i>
Scaup sp.	<i>Aythya sp.</i>
Surf Scoter	<i>Melanitta perspicillata</i>
Common Goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Turkey Vulture	<i>Cathartes aura</i>
Northern Harrier	<i>Circus cyaneus</i>
American Coot	<i>Fulica americana</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
American Avocet	<i>Recurvirostra americana</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Sandpiper sp.	<i>Calidris sp.</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Western Gull	<i>Larus occidentalis</i>
Forster's Tern	<i>Sterna forsteri</i>
Rock Dove	<i>Columba livia</i>
Plant Species	
black mustard	<i>Brassica nigra</i>
ripgut brome	<i>Bromus diandrus</i>

Wildlife Species	
Common Name	Scientific Name
soft chess	<i>Bromus hordeaceus</i>
horseweed	<i>Conyza spp.</i>
fennel	<i>Foeniculum vulgare</i>
alkali heath	<i>Frankenia salina</i>
gumplant	<i>Grindelia stricta</i>
Italian ryegrass	<i>Lolium multiflorum</i>
wax myrtle	<i>Myrica californica</i>
pickleweed	<i>Salicornia virginica</i>
Pacific cordgrass	<i>Spartina foliosa</i>

APPENDIX B

**POTENTIAL FOR SPECIAL STATUS PLANT AND WILDLIFE SPECIES TO OCCUR IN THE
PROJECT AREA**

Appendix B. Potential for Special Status Plant and Wildlife Species to Occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (March 2007), U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory search of the Redwood Pt., San Mateo, Woodside, Palo Alto, Mountain View, Newark, Hayward, San Leandro, and Hunter's Point USGS 7.5' quadrangles and a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990). Species may have been omitted due to lack of or distance from suitable habitat, such as open ocean or old growth forest.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Mammals					
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	CSC	Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Very sensitive to human disturbance.	Unlikely. Project Area prone to human disturbance.	Unlikely. Suitable roost habitat is not available.	None.
Western mastiff bat <i>Eumops perotis</i>	CSC	Found in a wide variety of habitat. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	Unlikely. Project Area does not contain large rock structures.	Unlikely. Adjacent areas do not contain large rock structures.	None.
pallid bat <i>Antrozous pallidus</i>	CSC	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures.	Moderate. May roost in buildings and other structures.	Unlikely. Adjacent areas do not contain suitable roosting sites.	Conduct pre-construction breeding bird surveys in the Project Area as described in Mitigation Measure 10.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat. Do not burrow, build loosely organized nests. Require higher areas for flood escape.	Unlikely. No suitable habitat is located in the project area.	Present. Species is known to occur at Bair and Greco Islands.	Recommend avoiding all suitable salt marsh vegetation during construction activities. Lighting design recommendations should be implemented as outlined in Mitigation Measure 15.
saltmarsh wandering shrew <i>Sorex vagrans halicoetes</i>	CSC	Found in salt marshes of the South Arm of San Francisco Bay. Prefer medium to high marsh 6-8ft above sea level.	Unlikely. No suitable habitat is located in the project area.	Present. Species known to occur at Bair Island.	Recommend avoiding all suitable salt marsh vegetation during construction activities. Lighting design recommendations should be implemented as outlined in Mitigation Measure 15.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	CSC	Typically occurs in forest habitats of moderate canopy and moderate to dense understory. Also found in chaparral habitats. Feeds mainly on woody plants, such as live oak, maple, coffeeberry, alder, and elderberry.	Unlikely. No forest habitat.	Unlikely. No forest habitat.	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
American badger <i>Taxidea taxus</i>	CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	Not Present. No suitable habitat present.	Not Present. No suitable habitat present.	None.
Pacific harbor seal <i>Phoca vitulina richardsi</i>	FP	Bair and Greco Islands are haul out and rookery sites (Lidicker 1997).	High. Seen foraging in Redwood Creek. May also occur in Westpoint Slough	Present. Seen foraging in Redwood Creek. Haul out areas are present at Bair Island.	Recommend providing a 300 foot buffer between construction activities and haul out sites as described in Mitigation Measure 8. Recommend the ferry route be at least 30 meters from known haul out locations as described in Mitigation Measure 13. Loud and abrupt noises should not be made within 300 meters of seal haul out areas. Recommend limiting acoustic disturbance to less than 160 decibels.
Birds					

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
American White Pelican <i>Pelecanus erythrorhynchos</i>	CSC	Colonial nester on large interior lakes. Nests on large lakes, providing safe roosting and breeding places in the form of well-sequestered islets.	Moderate. May forage in tidal waters of the Project Area. No suitable nesting habitat is located in the Project Area.	Moderate. May forage adjacent to the Project Area.	None. No suitable nesting habitat in Project Area.
California Brown Pelican <i>Pelecanus occidentalis californicus</i>	FE, SE	Found in estuarine, marine subtidal, and marine pelagic waters along the coast. Nest on rocky or low brushy slopes of undisturbed islands.	Moderate. May occasionally forage in the tidal waters of the Project Area. No suitable nesting habitat is located in the Project Area.	Moderate. Suitable breeding habitat is present at Bair and Greco Islands.	None. No suitable nesting habitat in Project Area. Species typically nests higher than elevations reached by ferry wake.
Double-crested Cormorant <i>Phalacrocorax auritus</i>	CSC	Nests along coast on sequestered islets, usually on ground with sloping surface or in tall trees along lake margins.	Moderate. May forage in tidal waters of the Project Area. No suitable nesting habitat is located in the Project Area.	Present. Seen foraging adjacent to Project Area.	None. No suitable nesting habitat in Project Area. Species is not likely to be impacted by ferry wake.
Least Bittern <i>Ixobrychus exilis</i>	CSC	Dense emergent wetlands near sources of freshwater, and in desert riparian (saltcedar scrub). Probably nests only in emergent wetlands.	Unlikely. No occurrences in San Mateo County.	Unlikely. No occurrences in San Mateo County.	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Barrow's Goldeneye <i>Bucephala islandica</i>	CSC	Breeds in high central and northern Sierra Nevada mountains, near wooded mountain lakes or large streams. Nest in tree cavities, such as a deserted nest-hole of a pileated woodpecker or flicker; also use nest boxes.	Moderate. May forage in Project Area during winter. No potential to nest in the Project Area.	Moderate. May forage in Project Area during winter. No potential to nest adjacent to the Project Area.	None.
Cooper's Hawk <i>Accipiter cooperii</i>	CSC	Associated with open or interrupted woodland and riparian habitats in the Coast ranges and foothills surrounding the Central Valley. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also nests in live oaks.	Moderate. This species may forage in upland portions of the Project Area. No suitable nesting habitat is present in the Project Area.	Moderate. This species may forage in uplands and wetlands adjacent to the Project Area. Unlikely to nest adjacent to the Project Area.	None. No suitable nesting habitat in Project Area.
Sharp-shinned Hawk <i>Accipiter striatus</i>	CSC	Ponderosa pine, black oak, riparian deciduous, mixed conifer and Jeffrey pine habitats. Prefers riparian areas. North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 feet of water.	Unlikely. No suitable forest habitat in Project Area, may pass by during migration.	Unlikely. No suitable forest habitat adjacent to Project Area, may pass by during migration.	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Golden Eagle <i>Aquila chrysaetos</i>	CSC, CFP	Rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.	Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.	None.
Northern Harrier <i>Circus cyaneus</i>	CSC	Found in open grasslands, prairies, and marshes. Tend to nest near water.	Unlikely. No suitable nesting or foraging habitat is present in the Project Area.	Present. Species seen over Bair Island during site visit.	None. No suitable nesting habitat in Project Area.
White-tailed Kite <i>Elanus caeruleus</i>	FP	Year-long resident of coastal and valley lowlands; rarely found away from agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	Unlikely. No suitable habitat is located in the Project Area.	High. Species has been documented to nest on Bair Island.	Operational and lighting recommendations should be followed as outlined in Mitigation Measure 15.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
<p>Bald Eagle <i>Haliaeetus leucocephalus</i></p>	<p>FT, FPD, SE, CF</p>	<p>Frequents ocean shores, lake margins, and rivers for both nesting and wintering. Requires large bodies of water, or free-flowing rivers with abundant fish and adjacent snags or other perches. Most nests are located within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branchwork. Shows a preference for ponderosa pine. Roosts communally in winter.</p>	<p>Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.</p>	<p>Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.</p>	<p>None.</p>
<p>Osprey <i>Pandion haliaetus</i></p>	<p>CSC</p>	<p>Frequents ocean shores, bays, fresh-water lakes, and larger streams. Prefers large trees, snags and dead-topped trees near large water bodies for cover and nesting. May travel 5-6 miles from nest to fishing areas.</p>	<p>Moderate. May forage in tidal waters in Project Area. No suitable nesting habitat in the Project Area.</p>	<p>Moderate. May use area adjacent to Project Area for foraging.</p>	<p>None. No suitable nesting habitat in Project Area.</p>
<p>Merlin <i>Falco columbarius</i></p>	<p>CSC</p>	<p>Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.</p>	<p>Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.</p>	<p>Unlikely. May occasionally use Project Area during migration. No suitable nesting habitat is present.</p>	<p>None.</p>

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Prairie Falcon <i>Falco mexicanus</i>	CSC	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Unlikely. No suitable nesting habitat in Project Area.	Unlikely. No suitable nesting habitat in Project Area.	None.
American Peregrine Falcon <i>Falco peregrinus anatum</i>	SE	Requires protected cliffs and ledges for cover. Feeds on a variety of birds, and some mammals, insects, and fish.	High. May forage in Project Area.	High. May use area adjacent to Project Area for foraging.	None. No suitable nesting habitat in Project Area.
California Black Rail <i>Laterallus jamaicensis coturniculus</i>	ST, CFP	Rarely seen resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area. Nest in dense stands of pickleweed	Unlikely. No suitable habitat is located in the Project Area.	High. Suitable habitat is present at Bair and Greco Islands.	Follow appropriate work windows for dredging within 250 feet of suitable habitat. If it is not possible to conduct dredging within work windows, pre-dredging surveys may be conducted for nesting rails with approval from USFWS. Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendation should be implemented as described in Mitigation Measure 15.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
<p>California Clapper Rail <i>Rallus longirostris obsoletus</i></p>	<p>FE, SE</p>	<p>Found in tidal salt marshes of the San Francisco Bay. Require mudflats for foraging and dense vegetation on higher ground for nesting.</p>	<p>Unlikely. No suitable habitat is located in the project area.</p>	<p>High. Suitable habitat is present at Bair and Greco Islands.</p>	<p>Follow appropriate work windows for dredging within 250 feet of suitable habitat. If it is not possible to conduct dredging within work windows, pre-dredging surveys may be conducted for nesting rails with approval from USFWS. Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendation should be implemented as described in Mitigation Measure 15.</p>
<p>Western Snowy Plover <i>Charadrius alexandrinus nivosus</i></p>	<p>FT, CSC</p>	<p>(Nesting) Federal listing applies only to the Pacific coastal population. Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.</p>	<p>Unlikely. No suitable habitat is located in the Project Area.</p>	<p>Present. Species is known to breed at Bair Island. May occur along beaches on the outskirts of Bair Island.</p>	<p>Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.</p>

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Long-billed Curlew <i>Numenius americanus</i>	CSC	Winters in large coastal estuaries, upland herbaceous areas, and croplands. Breeds in northeastern California in wet meadow habitat.	Unlikely. No suitable habitat is located in the Project Area.	Present. Species seen during site visit on adjacent mud flats.	None. No suitable nesting habitat in Project Area.
California Gull <i>Larus californicus</i>	CSC	(Nesting colony) littoral waters, sandy beaches, waters and shorelines of bays, tidal mud-flats, marshes, lakes, etc. Colonial nester on islets in large interior lakes, either fresh or strongly alkaline.	High. Species may forage in the Project Area.	High. Species may forage in Project Area and nest in nearby habitats.	None. Species is common and no suitable nesting habitat is present in the Project Area.
Black Skimmer <i>Rynchops niger</i>	CSC	Nests on gravel bars, low islets, and sandy beaches in unvegetated sites.	Moderate. Species may forage in the tidal waters of the Project Area. No suitable nesting habitat is located in the Project Area.	High. Species may forage and nest in adjacent areas.	Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
California Least Tern <i>Sterna antillarum browni</i>	FE, SE	Breeding colonies in San Francisco Bay found in abandoned salt ponds and along estuarine shores. Nests on barren to sparsely vegetated site near water.	Moderate. No suitable nesting habitat is located in the Project Area. Species may forage in areas adjacent to the Project Area.	High. Species may forage and nest at Bair Island.	Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.
Elegant Tern <i>Sterna elegans</i>	CSC	(Nesting colony) only known breeding colony in U.S. located in the salt work dikes at the south end of San Diego Bay. Nests on dikes between salt ponds in association with Caspian tern.	Not Present. No nearby occurrences for this species.	Not Present. No nearby occurrences for this species.	None.
Marbled Murrelet <i>Brachyramphus marmoratus</i>	FT, SE	(Nesting) Feeds near shore; nests inland along the Pacific coast, from Eureka to Oregon border, and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland. Nests often built in Douglas-fir or redwood stands containing platform-like branches.	Not Present. No suitable habitat present.	Not Present. No suitable habitat present.	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Short-eared owl <i>Asio flammeus</i>	CSC	Found in open, treeless areas with elevated sites for perches and dense vegetation for roosting and nesting.	Moderate. No suitable nesting habitat is present in the Project Area. Species may forage in the Project Area.	Present. Species is known to nest at Bair Island.	Ferry speeds should be reduced near Bair and Greco Islands as described in Mitigation Measure 14. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.
Burrowing Owl <i>Athene cunicularia</i>	CSC	Frequents open grasslands and shrublands with perches and burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old burrows of small mammals.	Unlikely. Minimal habitat in Project Area due to human disturbance. May forage in adjacent marsh habitat.	Moderate. May forage and nest in surrounding marsh habitat.	Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.
Loggerhead Shrike <i>Lanius ludovicianus</i>	CSC	Prefers open habitats with scattered shrubs, trees, pots, utility lines from which to forage for large insects. Nest well concealed above ground in densely-foliaged shrub or tree.	High. Suitable foraging and nesting habitat in the Project Area.	High. Suitable foraging and nesting habitat in Project Area.	Preconstruction surveys for breeding birds should be performed prior to ground disturbance as described in Mitigation Measure 10. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
California Horned Lark <i>Eremophila alpestris actia</i>	CSC	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	High. May forage or nest in the Project Area.	High. May forage or nest in areas adjacent to the Project Area.	Preconstruction surveys for breeding birds should be performed prior to ground disturbance as described in Mitigation Measure 10. Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.
Purple Martin <i>Progne subis</i>	CSC	Inhabits woodlands and low elevation coniferous forests. Nests in old woodpecker cavities and human-made structures. Nest is often located in tall, isolated tree or snag.	Unlikely. No suitable nesting habitat in Project Area.	Unlikely. No suitable habitat adjacent to Project Area.	None.
Yellow Warbler <i>Dendroica petechia brewsteri</i>	CSC	(Nesting) Frequents riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores and alders for nesting and foraging. Also nests in montane shrubbery in open conifer forests.	Unlikely. No suitable riparian habitat in Project Area.	Unlikely. No suitable riparian habitat adjacent to Project Area.	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Saltmarsh Common Yellowthroat <i>Geothlypis trichas sinuosa</i>	CSC	Frequents low, dense vegetation near water including fresh to saline emergent wetlands. Brushy habitats used in migration. Forages among wetland herbs and shrubs for insects primarily.	Unlikely. No suitable habitat is located in the Project Area	High. Suitable habitat is present at Greco and Bair Islands.	Lighting and trash recommendations should be implemented as described in Mitigation Measure 15.
Alameda Song Sparrow <i>Melospiza melodia pusillula</i>	CSC	Found in saline emergent wetlands of the south bay. Require low, dense vegetation for cover and nesting.	Unlikely. No suitable habitat is located in the Project Area.	High. Species may be present at Bair and Greco Islands.	Preconstruction breeding bird survey.
Tri-colored Blackbird <i>Agelaius tricolor</i>	CSC	(Nesting colony) highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	Unlikely. No suitable habitat present.	Unlikely. No suitable habitat present.	None.
Reptiles and Amphibians					
California tiger salamander <i>Ambystoma californiense</i>	FT, CSC	Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	No Potential. No suitable habitat present	No Potential. No suitable habitat present	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
California red-legged frog <i>Rana aurora draytonii</i>	FT, CSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
foothill yellow-legged frog <i>Rana boylei</i>	CSC	Found in or near rocky streams in a variety of habitats. Feed on both aquatic and terrestrial invertebrates.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
western pond turtle <i>Clemmys marmorata</i>	CSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
San Francisco garter snake <i>Thamnophis sirtalis tetrataenia</i>	FE, SE, CFP, RP	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense vegetative cover and water depths of at least one foot. Upland areas near water are important habitat features.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
Fishes					

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
river lamprey <i>Lampetra ayresi</i>	CSC	Lower Sacramento River, San Joaquin River and Russian River. May occur in coastal streams north of San Francisco Bay. Adults need clean, gravelly riffles, Ammocoetes need sandy backwaters or stream edges, good water quality and temps < 25 degrees C.	Moderate. May occur in tidal waters in the Project Area.	Moderate. May occur in tidal waters adjacent to the Project Area.	Implementation of BMPs during dredging and project construction as described in Mitigation Measure 12.
green sturgeon <i>Acipenser medirostris</i>	FT	Spawn in the Sacramento River and the Klamath River. Spawn at temperatures between 8-14 degrees C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	Unlikely. This species is more common in north San Francisco Bay.	Unlikely. This species is more common in north San Francisco Bay.	None.
Pacific herring <i>Clupea pallasii</i>	None	Pacific herring is a coastal marine fish that uses large estuaries for spawning and early rearing habitat.	High. May be present and spawn in tidal waters of the Project Area.	High. May be present and spawn in tidal waters adjacent to the Project Area.	Appropriate dredging work windows should be followed as described in Mitigation Measure 12. Implementation of BMPs during dredging and project construction as described in Mitigation Measure 12. Appropriate ferry speeds should be followed to reduce the potential for collision as described in Mitigation Measure 14.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
coho salmon-central CA coast <i>Oncorhynchus kisutch</i>	FE, SE	Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient oxygen.	Unlikely. Species is considered extirpated from San Francisco Bay (David Woodbury, NMFS, pers. comm.).	Unlikely. Species is considered extirpated from San Francisco Bay (David Woodbury, NMFS, pers. comm.).	None.
steelhead-central CA coast ESU <i>Oncorhynchus mykiss</i>	FT	From Russian River south to Soquel Creek and Pajaro River. Also San Francisco and San Pablo Bay Basins.	High. Species may use tidal waters in the Project Area for foraging and rearing.	High. Redwood creek upstream from the Project Area may be suitable spawning habitat. Species may use tidal waters for foraging and rearing.	Appropriate dredging work windows should be followed as described in Mitigation Measure 12. Implementation of BMPs during dredging and project construction as described in Mitigation Measure 12. Appropriate ferry speeds should be followed to reduce the potential for collision as described in Mitigation Measure 14.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
<p>chinook salmon (fall run) <i>Oncorhynchus tshawytscha</i></p>	<p>CSC, RP, NMFS</p>	<p>Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean</p>	<p>Moderate. Redwood Creek and Westpoint Slough may be suitable rearing and foraging habitat.</p>	<p>Moderate. Redwood Creek area may be suitable rearing and foraging habitat.</p>	<p>Appropriate dredging work windows should be followed as described in Mitigation Measure 12. Implementation of BMPs during dredging and project construction as described in Mitigation Measure 12. Appropriate ferry speeds should be followed to reduce the potential for collision as described in Mitigation Measure 14.</p>
<p>longfin smelt <i>Spirinchus thaleichthys</i></p>	<p>CSC, RP</p>	<p>Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.</p>	<p>High. This species has been collected near the mouth of Redwood Creek by the Marine Science Institute (MSI, 2000).</p>	<p>Present. This species has been collected near the mouth of Redwood Creek by the Marine Science Institute (MSI, 2000).</p>	<p>Implementation of BMPs during dredging and project construction as described in Mitigation Measure 12.</p>

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Sacramento splittail <i>Pogonichthys macrolepidotus</i>	CSC, RP	Endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow-moving river sections and dead end sloughs. Requires flooded vegetation for spawning and foraging for young. Splittail are primarily freshwater fish, but are tolerant of moderate salinity and can live in water where salinity levels reach of 10-18 parts per thousand.	Unlikely. Usually found in the north Bay.	Unlikely. Usually found in the north Bay.	None.
Invertebrates					
Olympia oyster <i>Ostreola conchaphila</i>	None	The waters in Westpoint Slough and off Bair Island contain native oyster beds (NOAA 2000).	Moderate. Substrate within the Project Area is not ideal for this species. However, species the species is known to occur adjacent to Project Area.	Present. Native oyster beds are known to be present off the shores of Bair Island.	Pre construction surveys for native oyster beds are recommended in the Project Area and along the proposed ferry route to determine the locations of native oyster beds as described in Mitigation Measure 4 . Appropriate ferry speeds and water quality BMPs should be followed so no impacts occur to native oyster beds, as described in Mitigation Measure 6.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT, SSI, RP	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT, SSI, RP	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> and <i>O. purpurascens</i> are the secondary host plants.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE, RP, SSI	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be <i>Viola adunca</i> .	No Potential No suitable habitat present	No Potential No suitable habitat present	None.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FE, SSI	Restricted to the northern coastal scrub of the San Francisco peninsula.. Hostplant is <i>Viola pedunculata</i> . Most adults found on east-facing slopes; males congregate on hilltops in search of females.	No Potential No suitable habitat present	No Potential No suitable habitat present	None.
Plants					
San Mateo thorn-mint <i>Acanthomintha duttonii</i>	FE, SE, List 1B	Chaparral, valley and foothill grassland, coastal scrub. Extant populations only known from very uncommon serpentinite vertisol clays; in relatively open areas. 50-200m. Blooms April- June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Franciscan onion <i>Allium peninsulare</i> var. <i>franciscanum</i>	List 1B	Cismontane woodland, valley and foothill grassland. Clay soils; often on serpentine. Dry hillsides. 100-300m. Blooms May- June	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
bent-flowered fiddleneck <i>Amsinckia lunaris</i>	List 1B	Cismontane woodland, valley and foothill grassland. 50-500m. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Santa Cruz manzanita <i>Arctostaphylos andersonii</i>	List 1B	Broadleaved upland forest, chaparral, north coast coniferous forest. Open sites, redwood forest. 180-800m. Blooms Nov-April.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Montara manzanita <i>Arctostaphylos montaraensis</i>	List 1B	Chaparral and coastal scrub habitat. 150-500 meters. Blooms January- March	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Kings Mountain manzanita <i>Arctostaphylos regismontana</i>	List 1B	Broadleaved upland forest, chaparral, north coast coniferous forest. Granitic or sandstone outcrops. 305-730m. Blooms Jan-April.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
coastal marsh milk-vetch <i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	List 1B	Coastal dunes, coastal salt marshes. Mesic sites in dunes or along streams or coastal salt marshes. 0-30m. Blooms April-October.	Moderate. Potential tidal wetland habitat occurs within the Project Area.	Moderate. Suitable tidal marsh habitat occurs on Greco and Bair Islands.	Recommend protocol level rare plant survey in the Project Area in June and August. No potential for impact in adjacent areas.
alkali milk vetch <i>Astragalus tener</i> var. <i>tener</i>	List 1B	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or in vernal pools. 1-170m. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat is unlikely to occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
San Joaquin spearscale <i>Atriplex joaquiniana</i>	List 1B	Chenopod scrub, meadows and seeps, playas, and valley and foothill grasslands. 1-835 meters. Blooms April-Oct.	Unlikely. Suitable habitat does not occur within the Project Area.	Moderate. Upland margins of Bair and Greco Island may support this species.	No further surveys or mitigation measures are necessary. No potential for impact in adjacent areas.
big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	List 1B	Chaparral, cismontane woodland, valley and foothill grassland ((sometimes serpentinite). 90-1400 meters. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i>	List 1B	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 1-230m. Blooms May-October.	Unlikely. Suitable habitat does not occur within the Project Area.	Moderate. Suitable habitat may occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary. No potential for impact in adjacent areas.
San Francisco Bay spineflower <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	List 1B	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Closely related to <i>C. Pungens</i> . Sandy soil terraces and slopes. 5-550m. Blooms April- July (August).	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	FE, List 1B	Cismontane woodland, coastal dunes, coastal scrub (sandy or gravelly). 3-300m. Blooms April-Sept.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
fountain thistle <i>Cirsium fontinale</i> var. <i>fontinale</i>	FE, SE, List 1B	Valley and foothill grassland, chaparral. Serpentine seeps and grassland. 90-180m. Blooms June-October.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
lost thistle <i>Cirsium praeteriens</i>	List 1A	Little information exists on this plant; it was collected from the Palo Alto area at the turn of the 20 th century. Although not seen since 1901, this cirsium is thought to be quite distinct from other cirsiums acc. to D. Keil. 0-100m. Blooms June-July.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
San Francisco collinsia <i>Collinsia multicolor</i>	List 1B	Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus. 30-250m. Blooms March-May.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Point Reyes bird's-beak <i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	List 1B	Coastal salt marsh. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc. 0-15m. Blooms June-October.	Moderate. Potential tidal wetland habitat occurs within the Project Area.	Moderate. Suitable tidal marsh habitat occurs across the channel on Greco and Bair Islands.	Recommend protocol level rare plant survey in June and August.
western leatherwood <i>Dirca occidentalis</i>	List 1B	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 30-550m. Blooms Jan-March (April).	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
San Mateo woolly sunflower <i>Eriophyllum latilobum</i>	FE, SE, List 1B	Cismontane woodland. Often on roadcuts; found on and off of serpentine. 45-150m. Blooms May-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Hoover's button-celery <i>Eryngium aristulatum</i> var. <i>hooveri</i>	List 1B	Vernal pools. Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. 5-45m. Blooms July.	Unlikely. Suitable habitat does not occur within the Project Area.	Moderate. Suitable habitat may be present adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Hillsborough chocolate lily <i>Fritillaria biflora</i> var. <i>ineziana</i>	List 1B	Cismontane woodland, valley and foothill grassland. Probably on serpentine, most recent site is in serpentine grassland. 90-160m. Blooms March-April.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
fragrant fritillary <i>Fritillaria liliacea</i>	List 1B	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine, various soils reported though usually clay, in grassland. 3-410m. Blooms February-April.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Diablo helianthella <i>Helianthella castanea</i>	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1300m. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Marin western flax <i>Hesperolinon congestum</i>	FT, ST, List 1B	Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. 30-365m. Blooms April-July.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Santa Cruz tarplant <i>Holocarpha macradenia</i>	FT, SE, List 1B	Coastal prairie, coastal scrub, valley and foothill grassland. 10-220m. Blooms June- Oct.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Contra Costa goldfields <i>Lasthenia conjugens</i>	FE, List 1B	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range; extremely endangered. Vernal pools, swales, low depressions, in open grassy areas. 1-445m. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Moderate. Suitable habitat may be present adjacent to the Project Area.	No further surveys or mitigation measures are necessary. No potential for impacts in adjacent areas.
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	List 1B	Marshes and swamps. Occurs in large contiguous areas of salt marsh, often in brackish areas. 0-4 m. Blooms May-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Moderate. Suitable habitat may be present adjacent to the Project Area.	No further surveys or mitigation measures are necessary. No potential for impacts in adjacent areas.
beach layia <i>Layia carnosa</i>	FE, SE, List 1B	Coastal dunes, coastal scrub. 0-60m. Blooms March- July.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Crystal Springs lessingia <i>Lessingia arachnoidea</i>	List 1B	Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine; sometimes on roadsides. 60-200m. Blooms July-October.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
woolly-headed lessingia <i>Lessingia hololeuca</i>	List 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland (clay, serpentinite). 15-305m. Blooms June-October.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
coast lily <i>Lilium maritimum</i>	List 1B	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps. 5-335m. Blooms May-August.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Species occurs in freshwater marshes and swamps. No known occurrences in salt water habitats.	No further surveys or mitigation measures are necessary.
San Mateo tree lupine <i>Lupinus eximius</i>	List 3	Chaparral, coastal scrub. 90-550m. Blooms April-July.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
arcuate bush mallow <i>Malacothamnus arcuatus</i>	List 1B	Chaparral. Gravelly alluvium. 80-355m. Blooms April-September.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
Davidson's bush mallow <i>Malacothamnus davidsonii</i>	List 1B	Chaparral, cismontane woodland, coastal scrub, riparian woodland. 185-855m. Blooms Jan-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Hall's bush mallow <i>Malacothamnus hallii</i>	List 1B	Chaparral, coastal scrub. 10-760m. Blooms May-Sept.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Mt. Diablo cottonweed <i>Micropus amphibolus</i>	List 3	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland (rocky). 45-825m. Blooms March-May.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
robust monardella <i>Monardella villosa</i> ssp. <i>globosa</i>	List 1B	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland. Openings. 30-300m. Blooms June-July.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
pincushion navarretia <i>Navarretia myersii</i> ssp. <i>myersii</i>	List 1B	Vernal pools. 2-330m. Blooms May.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Dudley's lousewort <i>Pedicularis dudleyi</i>	SR, List 1B	Chaparral, north coast coniferous forest, valley and foothill grassland. Deep shady woods of older coast redwood forests; also in maritime chaparral. 100-490m. Blooms April-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
white-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	FE, SE, List 1B	Valley and foothill grassland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 35-620m. Blooms March-May.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
Choris's popcorn-flower <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	List 1B	Chaparral, coastal scrub, coastal prairie. Mesic sites. 15-100m. Blooms March-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
hairless popcorn-flower <i>Plagiobothrys glaber</i>	List 1A	Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. 5-180m. Blooms March-May.	Unlikely. Project Area consists of fill material and is too disturbed to support this species.	Moderate. Suitable habitat is present adjacent to the Project Area.	No further surveys or mitigation measures are necessary. No potential for impacts in adjacent areas.
slender-leaved pondweed <i>Potamogeton filiformis</i>	List 2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 15-2310m. Blooms May-July.	Unlikely. Suitable freshwater habitat does not occur within the Project Area.	Unlikely. Suitable freshwater habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
adobe sanicle <i>Sanicula maritima</i>	List 1B	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland (clay, serpentinite). 3-240m. Blooms Feb-May.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
San Francisco campion <i>Silene verecunda</i> ssp. <i>verecunda</i>	List 1B	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie. Often on mudstone or shale; one site on serpentine. 30-645m. Blooms March-June (August).	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
most beautiful jewel-flower <i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	List 1B	Chaparral, cismontane woodland, valley and foothill grassland. 110-1000m. Blooms (May) April-June.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.
California seablite <i>Suaeda californica</i>	FE, List 1B	Marshes and swamps. Margins of coastal salt marshes. 0-5m. Blooms July to October.	Moderate. Suitable habitat occurs as tidal wetland within the Project Area.	Moderate. Suitable habitat occurs as tidal wetlands across the channel on Greco and Bair Islands.	Recommend protocol level rare plant survey in August.
saline clover <i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	List 1B	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. 0-300m. Blooms April-June.	Moderate. Suitable habitat occurs as tidal wetland within the Project Area.	Moderate. Suitable habitat occurs as tidal wetlands on Greco and Bair Islands.	Recommend protocol level rare plant survey in April or June.
caper-fruited tropidocarpum <i>Tropidocarpum capparideum</i>	List 1A	Valley and foothill grassland. Alkaline clay. 0-455m. Blooms March-April.	Unlikely. Suitable habitat does not occur within the Project Area.	Unlikely. Suitable habitat does not occur adjacent to the Project Area.	No further surveys or mitigation measures are necessary.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE IN PROJECT AREA	POTENTIAL FOR OCCURRENCE ADJACENT TO PROJECT AREA	RECOMMENDATIONS
<p>* Key to status codes:</p> <p>FE Federal Endangered FT Federal Threatened FPD Federal Proposed for De-listing FP Federal Proposed for listing NMFS Species under the Jurisdiction of the National Marine Fisheries Service RP Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan SE State Endangered ST State Threatened SR State Rare CSC CDFG Species of Special Concern CFP CDFG Fully Protected Animal SSI CDFG Special Status Invertebrates List 1B CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere List 2 CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere List 3 CNPS List 3: Plants about which CNPS needs more information (a review list)</p>					

Appendix C

**Wetland and Water Permitting Scenarios for the Redwood City Ferry Terminal
(WRA memo)**

Memorandum

To: Michael Fajans

From: Justin Semion
semion@wra-ca.com
ext. 132

Date: March 27, 2007

Subject: Redwood City Ferry Terminal Biological Permitting

The purpose of this memorandum is to describe the potential permitting scenarios for the development of the Redwood City Ferry Terminal (Project) at the Port of Redwood City, California. The preferred alternative is for the placement of the terminal in the northern portion of Westpoint Slough, within a portion of the property currently used by Cemex as a sand and gravel storage and sorting facility. However, the permitting scenarios described below are applicable to all three potential terminal locations currently under consideration.

There are two potential U.S. Army Corps of Engineers (Corps) permitting scenarios for the Project:

- 1.) Section 10 Permit (administered under Section 10 of the Rivers and Harbors Act)
- 2.) Section 404 Individual Permit (administered under Section 404 of the Clean Water Act)

The type of permit that is required will depend on the extent of impacts to Corps jurisdiction. The two types of permits differ substantially in cost and timeline due to the procedures that are required for preparation and approval of each permit. Table 1 shows the potential timelines and typical consulting services budgets for a Section 10 permit and Section 404 Individual permit. WRA strongly recommends that an attorney be employed for a Section 404 Individual Permit.

Table 1. Typical timeline and consulting services budgets for Corps Section 10 permits and Corps Section 404 Individual permits.		
Permit Type	Typical Biological Consulting Services Budget¹	Typical Timeline
Section 10 permit	\$15,000 - 20,000 ²	6 months - 1 year
Section 404 Individual permit	\$50,000 - 100,000 ³	2 - 3 years

1. Does not include additional fees that may be needed for lawyer, engineering or other non-biological expenses.

2. Cost for permitting services. Does not include expenses necessary for sediment sampling or other non-biology related work.

3. May not include mitigation fees and expenses, or expenses related to lawyer and engineering fees. Total consulting costs may exceed \$100,000.

The type of permit required largely depends on the elevation at which impacts will occur. Table 2 shows tidal datums relevant to Corps jurisdiction in the Project area.

Table 1. Tidal Datums relative to Corps of Engineers Jurisdiction at the Port of Redwood City.			
Tidal Elevation	Elevation in feet Mean Lower Low Water (MLLW) datum	Elevation in feet National Geodetic Vertical Datum 1929 (NGVD)¹	Elevation in feet North American Vertical Datum 1988 (NAVD)¹
MLLW	0.00	-4.13	-1.48
MHW ²	7.59	3.46	6.11
HTL ³	9.59	5.46	8.11

1. Estimated based on superseded tidal benchmark data for Redwood City compared to current tidal benchmark data from the Dumbarton Bridge.

2. Upper elevation of Corps Section 10 jurisdiction. Impacts below this elevation for this project would be covered under Section 10 permits.

3. Upper elevation of Corps Section 404 jurisdiction. Impacts between the HTL and MHW would be covered under a Corps Section 404 Individual Permit.

A Section 10 permit would be applicable if the only impacts that occurred as a result of the Project were to areas below the elevation of Mean High Water (MHW). A Corps Section 404 Individual Permit would be needed if the Project resulted in impacts to areas between MHW and the High Tide Line (HTL). The HTL is the extent of Corps jurisdiction in tidal areas under Section 404 of the Clean Water Act. A Section 404 Individual Permit would also be required if Corps jurisdictional wetlands or other (nontidal) waters are impacted by the Project.

If the only Project impacts to Corps jurisdictional areas were dredging and installation of piles below the elevation of MHW, a Section 10 Permit could be obtained. A Section 404 Individual Permit would be required if piles, building foundations, rip rap, or other construction related materials were installed between the elevation of MHW and the HTL. A Section 404 Individual Permit would also be required if tidal wetlands along Westpoint Slough or the wetland channel along the eastern edge of the Cemex facility were filled or otherwise impacted by road crossings, building foundations or parking areas. Road crossings of Corps jurisdictional areas that are constructed as free span bridges (no bridge supports or rip rap placed in the wetlands or waters) are not considered impacts by the Corps¹. If the only impact to Corps Section 404 jurisdiction was due to the removal of the existing pier, a Section 404 permit would not be required [Mark D’Avingnon (South Section Chief, San Francisco District), pers. comm.].

A Section 404 wetland delineation is required prior to or concurrent with application for a Section 404 Individual Permit. A Section 10 permit does not require that a Section 404 wetland delineation be performed. However, a wetland delineation is recommended for the Project area prior to or concurrent with application for a Section 10 permit.

Section 10 Permit Process

If the Project requires only a Section 10 permit, permitting may be coordinated through the

¹Although free span bridges are not considered impacts by the Corps, BCDC and the RWQCB may consider the shade created by the bridge to be an impact to wetlands, and may require mitigation for shading impacts.

Dredged Material Management Office (DMMO). The purpose of the DMMO is to serve as a clearinghouse for dredging related permits. The DMMO includes representatives from the Corps, San Francisco Bay Regional Water Quality Control Board (RWQCB), San Francisco Bay Conservation and Development Commission (BCDC), and, when applicable, the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). The DMMO may be the primary contact for permitting if the only Project impacts were to areas below the elevation of MHW. Permits from the Corps, RWQCB, and BCDC can be requested from the DMMO through completion of one permit application. Measures required through the DMMO permitting process typically involve a chemical analysis of sediment in the dredge area prior to dredging, the use of silt curtains during dredging operations, adherence to dredging work windows, and/or other site specific measures. Mitigation in the form of habitat creation is not typically required by the Corps for a Section 10 Permit.

Section 404 Individual Permit Process

The Section 404 Individual permit process requires more time and is more costly than the Section 10 permitting process. In addition, the Section 404 permitting process applies only to the Corps, and separate permit applications would need to be prepared for the RWQCB and BCDC. A Section 404 permit also requires that a Section 404 jurisdictional delineation be performed prior to or concurrent with the permit application. The Section 404 permit application requires an analysis of area impacted, volume of fill placed in Corps jurisdictional areas, a complete project description (including phasing, if applicable), a list of surrounding property owners, and an analysis of the functions and values of the impacted wetlands. A mitigation and monitoring plan is also required as part of a complete Section 404 permit application. Mitigation for any Section 404 jurisdictional wetlands impacted is required at a minimum ratio of 1 acre created wetlands for each acre of impacted wetlands. Mitigation ratios for individual permits are typically higher than 1:1 (typically 3:1, created to impacted wetland area). Mitigation for impacts to nonwetland waters (such as Westpoint Slough) may also be required for Section 404 permitting.

In addition, a Section 404(b)(1) alternatives analysis would need to be included as part of the permit application. The goal of a Section 404(b)(1) alternatives analysis is to determine the Least Environmentally Damaging Practicable Alternative (LEDPA). As part of the 404(b)(1) alternatives analysis, the Project would be required to analyze alternative locations for the Project to determine if the preferred alternative was the LEDPA. The process of determining the LEDPA typically involves several meetings with the Corps and other applicable agencies to reach agreement on what alternative constitutes the LEDPA. No wetlands would be impacted if the ferry terminal is located at the end of Herkner Rd, and this site would need to be examined under the Section 404(b)(1) alternatives analysis process. The Section 404(b)(1) alternatives analysis also requires an analysis of the “practicability” of the Project alternatives. This includes economic analysis, practical considerations (such as parking areas and construction feasibility), and operational considerations (such as ferry ride time) be considered. However, the practicability of an alternative is a somewhat subjective judgement, and there is no guarantee that the Corps will accept any one factor as overriding consideration in determining the LEDPA².

RWQCB and BCDC Permitting

If the Project only requires a Section 10 permit, most permitting requirements of the RWQCB

²Review of the practicability of a project often necessitates attorney involvement due to the complexity of legal issues surrounding a Section 404(b)(1) alternatives analysis.

and BCDC may be met through a single application to the DMMO. If a Section 404 Individual Permit is needed, separate applications will be necessary for each of these agencies. The RWQCB is not likely to require any measures in addition to those typically required for dredging if the Project qualifies for a Section 10 permit only. However, if the Project impacts wetlands or other Section 404 jurisdictional areas the RWQCB may require mitigation for those impacts in the form of wetland or open water habitat creation. Similarly, BCDC would not likely require habitat creation if project impacts were limited to Section 10 jurisdiction, but may require mitigation in the form of habitat creation if Section 404 jurisdictional areas were impacted. BCDC is may require that public shoreline access be provided as part of the Project regardless of whether or not Section 404 jurisdictional areas are impacted.

Section 7 Consultation

In addition to the above permitting requirements, a Section 7 consultation with the USFWS and NMFS would be necessary because the Project has the potential to affect wildlife species protected under the Federal Endangered Species Act (FESA) and Essential Fish Habitat (EFH) regulations. A formal Section 7 consultation may be required for a either a Section 10 permit, or a Section 404 permit. A formal Section 7 consultation requires that a Section 7 Biological Assessment be prepared to discuss the potential affects the Project may have on species covered under the FESA and EFH. Section 7 Biological Assessments are required to be prepared in a specific format for submission to the Corps and USFWS. Through the Section 7 consultation process, ferry operations (speed, distance, etc.) would be examined to determine appropriate operational protocols to protect species from habitat loss, nest inundation, acoustic disturbance, or other potential affects of ferry operations.