Appendix A

2015 APD Project Final Initial Study/ Mitigated Negative Declaration and Addenda

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

AIRPORT PERIMETER DIKE FEMA AND SEISMIC IMPROVEMENTS PROJECT

Oakland International Airport
Oakland, Alameda County, California

Prepared for:
PORT OF OAKLAND

Prepared by:
URS Corporation Americas

~~September~~ November 2015

(Amended following the public review period.
Additions shown in underline; deletions in ~~strike though~~)

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
AIRPORT PERIMETER DIKE FEMA
AND SEISMIC IMPROVEMENTS PROJECT

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INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
AIRPORT PERIMETER DIKE FEMA
AND SEISMIC IMPROVEMENTS PROJECT
OAKLAND INTERNATIONAL AIRPORT

This Initial Study/Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.), and the CEQA Guidelines found in Chapter 14 of the California Code of Regulations.

ENVIRONMENTAL CHECKLIST FORM

Project Title:	Oakland International Airport (OAK or Airport) Perimeter Dike Federal Emergency Management Agency (FEMA) and Seismic Improvements Project (Proposed Project)
Lead Agency Name and Address:	Port of Oakland (Port) Environmental Programs and Planning Division 530 Water Street Oakland, California 94607
Contact Person and Phone Number:	Douglas Herman, Associate Port Environmental Scientist (510) 627-1184
Responsible Agencies:	San Francisco Bay Regional Water Quality Control Board, California Department of Water Resources, United States Army Corps of Engineers, and San Francisco Bay Conservation and Development Commission
Project Location:	The Proposed Project is in the City of Oakland—with a small portion in the City of San Leandro—in Alameda County, California. OAK is 2 miles west of Interstate 880, and is adjacent to San Francisco Bay. The Airport is primarily bounded by Doolittle Drive on the northeast and north, Harbor Bay Parkway on the northwest, San Francisco Bay on the southwest, and San Leandro Bay on the northeast.
Project Sponsor's Name and Address:	Port of Oakland Aviation Division 530 Water Street Oakland, California 94607
General Plan Designation:	The Proposed Project site is designated by the City of Oakland General Plan for airport uses, and is in the Seaport and Airport/Showcase District, as defined by the City of Oakland General Plan.

Zoning:	Port Jurisdiction – Transportation
Description of Project:	The Port is proposing to implement the Proposed Project, which involves improving the Airport's perimeter dike to comply with FEMA requirements for 100-year flood protection, and to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake.
Surrounding Land Uses and Settings:	The Airport is surrounded by three cities with a mix of land uses, and by San Francisco Bay waters. To the northwest, Alameda has recreational, residential, office, and light industrial uses. To the northeast, Oakland has public, recreational, office, commercial, and light industrial uses. To the southeast, San Leandro has public open space, commercial, and light and heavy industrial uses. San Leandro and San Francisco bays surround the Airport to the north, south, and southwest.

EXECUTIVE SUMMARY

Project Overview

The Proposed Project is being undertaken by the Port of Oakland (Port) in response to the Federal Emergency Management Agency (FEMA) requirements for the certification of the perimeter dike at the Oakland International Airport (OAK or Airport) for 100-year flood protection, and to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake. The main improvements to the perimeter dike include the following:

- Raising the crest of the dike (see inset in **Figure 2-3**) above the 10-foot elevation of the Stillwater Level by approximately 3 feet—with 2 feet for freeboard and approximately 1 foot for sea-level rise.
- Raising the crest structure to an elevation of the 100-year Total Water Level, plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise. For the areas where raising the crest structure would not be feasible, the dike would be armored through the installation of riprap.
- Controlling through-seepage by constructing a soil-cement block, a seepage cutoff wall, or a drainage system along a portion of the perimeter dike.
- Improving the inboard slope of the dike by installing stability berms or shear panels.
- Improving seismic performance of the sand portion of the dike by installing stone columns or a soil-cement block.

Project Location

The Proposed Project is in the City of Oakland—with a small portion in the City of San Leandro—in Alameda County, California. OAK is 2 miles west of Interstate 880, and is adjacent to San Francisco Bay (**Figure 2-1**). The Airport is primarily bounded by Doolittle Drive on the northeast and north, Harbor Bay Parkway on the northwest, San Francisco Bay on the southwest, and San Leandro Bay on the northeast.

Summary of Impacts

Impact Assessment

The guidance provided in Appendix G of the State CEQA Guidelines (Appendix G Checklist) was employed to screen effects and provide impact categories.

Environmental Impacts and Proposed Avoidance and Minimization Measures

The evaluation of environmental impacts provided in this Initial Study/Mitigated Negative Declaration (IS/MND) is based, in part, on the Appendix G Checklist. An impact assessment matrix is provided as part of the evaluation for each environmental issue area, with impact levels defined as follows:

- **Potentially Significant Impact.** This column is checked if there was substantial evidence that a project-related environmental effect may be significant. If one or more "Potentially Significant Impacts" are identified, a Project Environmental Impact Report (EIR) must be prepared.
- **Less than Significant with Mitigation.** This column is checked when the project may result in a significant environmental impact, but the incorporation of identified applicant or project-specific mitigation measures into the project will reduce the identified effect(s) to a less than significant level.

- **Less than Significant Impact.** This column is checked when the project would not result in any significant effects. The project's impact was less than significant even without the incorporation of a project-specific mitigation measure.
- **No Impact.** This column is checked when the project would not result in any impact in the category or the category did not apply.

The environmental factors checked below in **Table ES-1** would be potentially affected by this Project. The Port has incorporated Project revisions, including the implementation of avoidance and minimization measures, that reduce any potentially significant impact to "Less than Significant with Mitigation," as detailed in **Section 3** of this IS/MND.

Table ES-1
Environmental Factors Potentially Affected by the Proposed Project

☐ Aesthetics	☐ Agriculture and Forest Resources	☒ Air Quality/Greenhouse Gas Emissions
☒ Biological Resources	☐ Cultural Resources	☐ Geology and Soils
☒ Hazards and Hazardous Materials	☒ Hydrology and Water Quality	☐ Land Use and Planning
☐ Mineral Resources	☐ Noise	☐ Population and Housing
☐ Public Services	☒ Recreation	☐ Transportation/Traffic
☐ Utilities and Service Systems		

Table ES-2 lists mitigation measures designed to reduce or avoid potentially significant impacts identified through the environmental analysis detailed in Chapter 3. With implementation of the proposed mitigation measures, all Project-related impacts would be reduced to less-than-significant levels.

Table ES-2
Summary of Mitigation Measures

Air Quality
· **Mitigation Measure AQ-1**: Fugitive Dust Control Measures
Biological Resources
· **Mitigation Measure BO-1:** Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat
· **Mitigation Measure BO-2:** Environmental Awareness Training
· **Mitigation Measure BO-3:** Conduct Pre-Construction Surveys
· **Mitigation Measure BO-4:** Offsite Mitigation for Wetlands and Other Waters
Hazards and Hazardous Materials
· **Mitigation Measure HZ-1:** Hazardous Material Handling Documentation
· **Mitigation Measure HZ-2:** Active Fuel Pipelines Hazards
· **Mitigation Measure HZ-3:** Contaminated Soils and/or Groundwater
Recreation
· **Mitigation Measure RE-1:** Bay Trail Detour Plan and Access

CHAPTER 1.0
INTRODUCTION

1.1 PURPOSE OF THIS INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

This Initial Study (IS)/Mitigated Negative Declaration (MND) is prepared pursuant to the California Environmental Quality Act (CEQA). As provided in Section 15063 of the CEQA Guidelines, a Lead Agency shall conduct an IS to determine whether a project may have a significant effect on the environment. CEQA is a public disclosure law. The CEQA process is intended to inform the public of the potential environmental effects of government decisions and to encourage informed decision-making by public agencies. CEQA is a statute that requires state and local agencies to identify the significant environmental impacts of their actions, and to avoid or mitigate those impacts, if feasible. The Port of Oakland (Port) is the Lead Agency, as defined under CEQA Guidelines Section 15050.

The purpose of this IS is to provide the Lead Agency with information to use as the basis for deciding whether to prepare an environmental impact report or a negative declaration for the Airport Perimeter Dike Federal Emergency Management Agency (FEMA) and Seismic Improvements Project (Proposed Project). A negative declaration is a written statement by the Lead Agency that briefly describes the reason that a proposed project would not result in a significant effect on the environment, and serves as the basis of the decision not to prepare an environmental impact report.

This IS was prepared in accordance with CEQA, Public Resources Code (PRC) Section 21000 *et seq*. and associated CEQA Guidelines, PRC Section 15000 *et seq*. The IS is an evaluation of the potential impacts associated with the Proposed Project, and describes the Port's efforts to ensure that all resource impacts are reduced to a less-than-significant level with mitigation incorporated, qualifying the Proposed Project for an MND.

This IS provides the Port, its Board of Port Commissioners, and the public with an understanding of the potential environmental impacts associated with the Proposed Project.

1.2 OVERVIEW OF THE PROPOSED PROJECT

The Proposed Project is being undertaken by the Port in response to FEMA requirements for the certification of the perimeter dike for 100-year flood protection, and to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake. The main improvements to the perimeter dike include the following:

- Raising the crest of the dike (see inset in **Figure 2-3**) above the 10-foot elevation of the Stillwater Level (SWL)[1] by approximately 3 feet—with 2 feet for freeboard[2] and approximately 1 foot for sea-level rise.

[1] Stillwater is the flood level that does not include the effects of waves (wave amplitude and wave setup).

[2] Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected-size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

- Raising the crest structure to an elevation of the 100-year Total Water Level (TWL),[3] plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise. For the areas where raising the crest structure would not be feasible, the dike would be armored through the installation of riprap.
- Controlling through-seepage by constructing a soil-cement block, a seepage cutoff wall, or a drainage system along a portion of the perimeter dike.
- Improving the inboard slope of the dike by installing stability berms or shear panels.
- Improving seismic performance of the sand portion of the dike by installing stone columns or a soil-cement block.

1.3 DOCUMENT ORGANIZATION

The document is divided into six chapters:

- **Chapter 1, Introduction**, describes the purpose of this environmental document, and includes an overview of the Proposed Project and the document organization.
- **Chapter 2, Project Description and Background**, provides a description of the Proposed Project, including Proposed Project construction best management practices (BMPs) (i.e., measures that are incorporated into the Proposed Project description that would reduce or avoid potential adverse impacts).
- **Chapter 3, Environmental Factors Potentially Affected**, evaluates the potential environmental impacts that may result from the Proposed Project.
- **Chapter 4, References**, lists material used in the preparation of this IS/MND.
- **Chapter 5, List of Preparers**, identifies the authors of and contributors to this document.
- **Chapter 6, Acronyms and Abbreviations**, presents definitions for acronyms and abbreviations used in this IS/MND.

[3] 100-year Total Water Level = Stillwater Level (or the flood level without the effects of waves) + wave runup.

CHAPTER 2.0
PROJECT DESCRIPTION AND BACKGROUND

2.1 PROJECT OBJECTIVE

The purpose of the Proposed Project is to provide protection against the potential for overtopping or breaching of the perimeter dike during a 100-year flood or during a seismic event, which could lead to flooding of the Oakland International Airport (OAK or Airport) runways and interruption of Airport operations. If the perimeter dike were breached, flight operations at the South Field could be reduced or suspended for an unspecified period of time, compromising the Airport's ability to provide passenger and cargo services.

In addition, the purpose of the Proposed Project is to provide protection against a 100-year flood event;[4] to meet the FEMA requirements for the South Field relating to a 100-year flood event, and to reduce the susceptibility of the perimeter dike from overtopping or deformation as a result of seismic events.

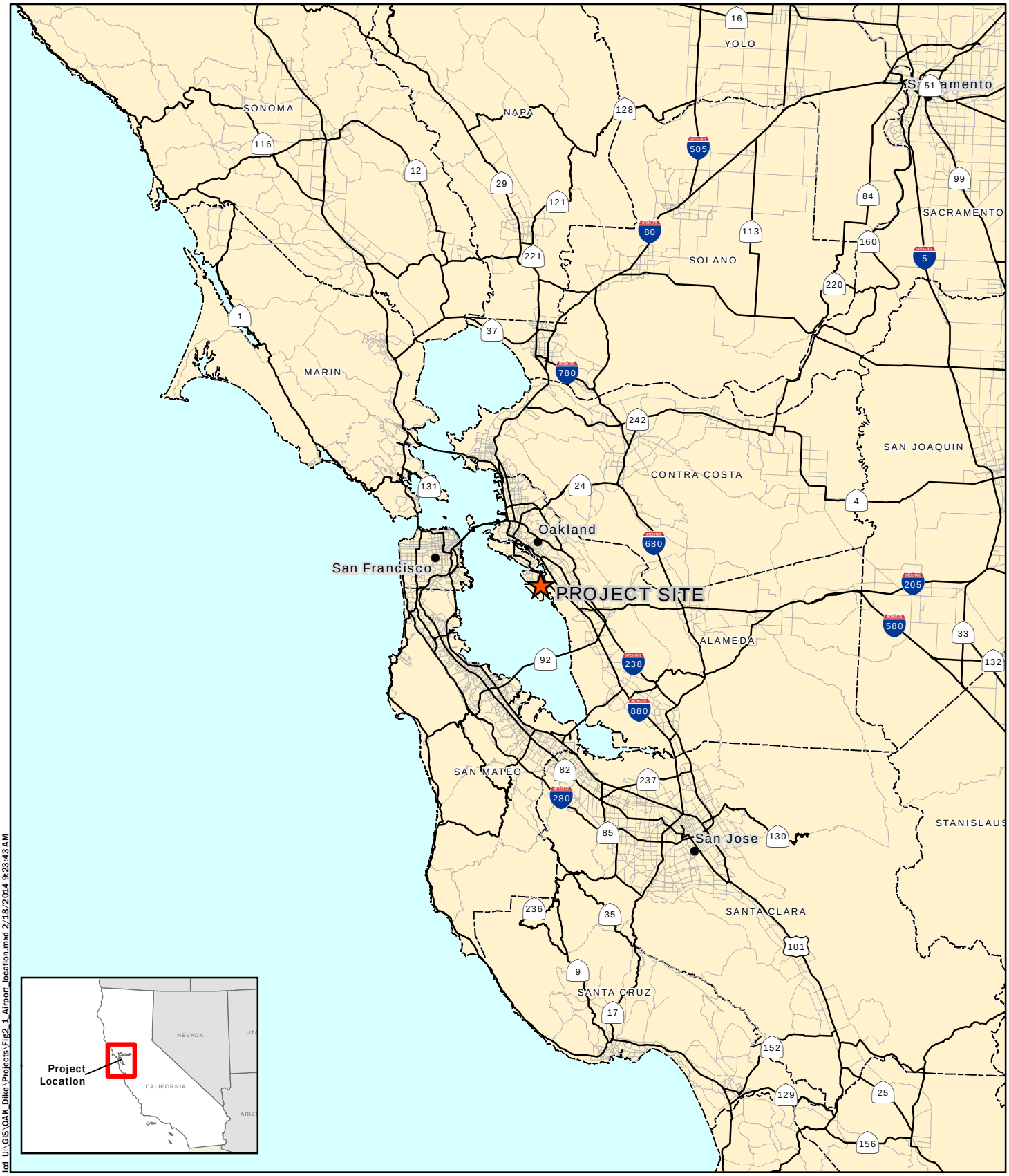
2.2 PROJECT BACKGROUND

2.2.1 DESCRIPTION OF EXISTING AIRPORT

The Port owns and operates OAK, a medium-hub airport, and holds a certificate under 14 Code of Federal Regulations (CFR) Part 139, which serves to ensure safety in air transportation. OAK—a primary commercial service airport accommodates both commercial service aircraft and general aviation operations (small privately owned aircraft). The Airport, located in the City of Oakland—with a small portion in the City of San Leandro—in Alameda County, California, is approximately 2 miles west of Interstate 880 (I-880), and is adjacent to San Francisco and San Leandro bays. OAK provides airfield, terminal, and support facilities for commercial flights, air charter/taxi operations, air cargo, military, and general aviation operations. The location of OAK is shown on **Figure 2-1**, and the layout and facilities of the Airport are shown on **Figure 2-2**. OAK is a critical component of the transportation network serving the San Francisco Bay Area, the region, the California Aviation System Plan, and the National Airspace System. The Airport also provides international air service, including service to Mexico, Canada, and Europe. The Bay Area relies on aviation as a major means of travel and for the shipment of goods. In 2014, approximately 10.3 million passengers and 1.1 million tons of air mail and freight were transported through the Airport (OAK, 2014).

The Airport encompasses approximately 2,600 acres, including approximately 503 acres of wetlands under the jurisdiction of the United States Army Corps of Engineers (USACE). The airfield at OAK consists of four runways (10R/28L, 10L/28R, 15/33, and 12/30), three of which are at the North Field and serve primarily general aviation aircraft, or as alternative commercial runways during emergencies and maintenance shutdowns of the fourth runway (Runway 12/30). The South Field has one runway, Runway 12/30, which serves commercial air carriers, corporate aircraft, and air cargo aircraft.

[4] The 100-year flood event is a flood (i.e., discharge) having a 1 percent chance of being equaled or exceeded in any given year, and is relative to the specific geography of a project site.



Major Cities
Major Highways
County Boundaries

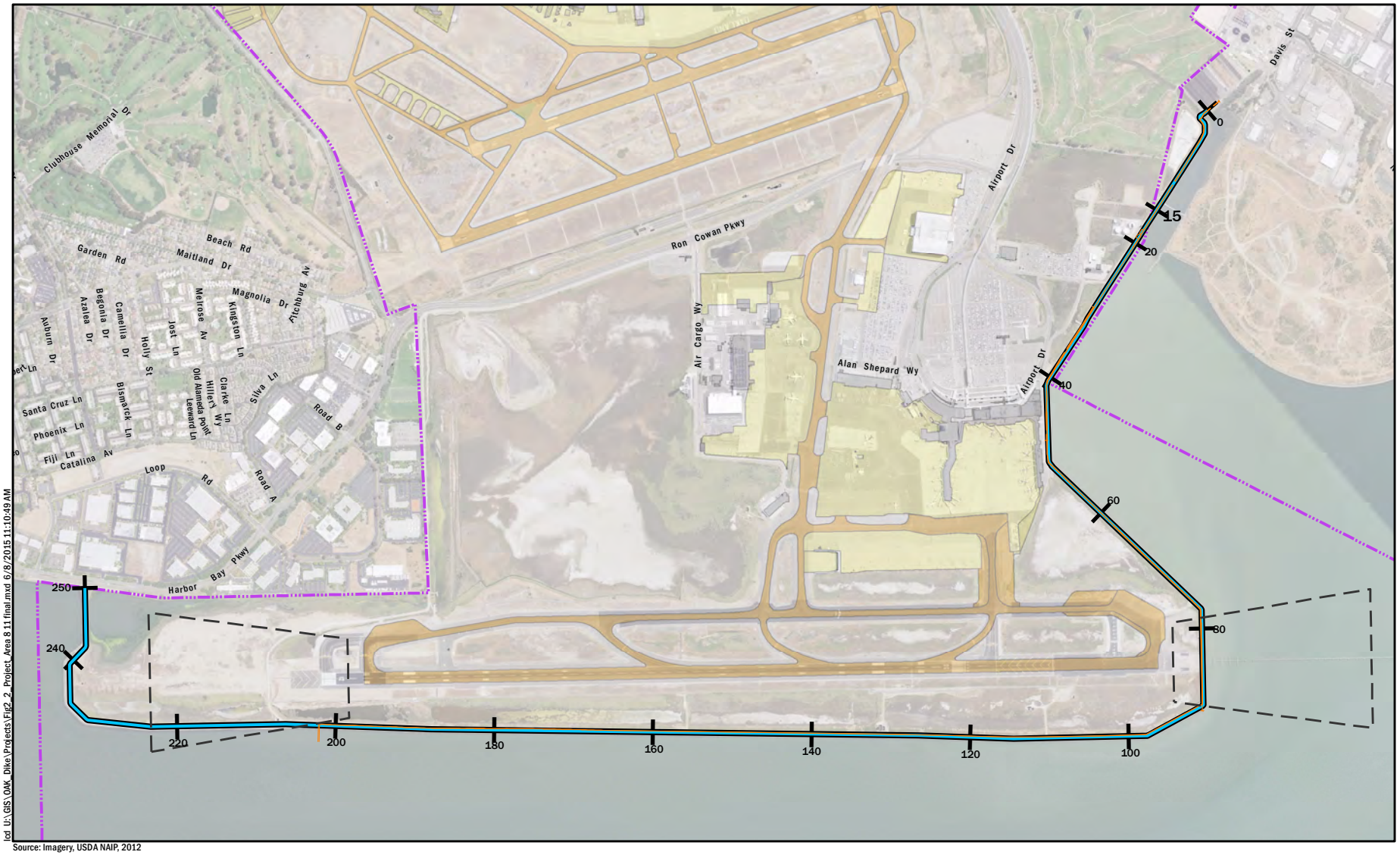
0 7.5 15 MILES

AIRPORT VICINITY

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 2-1



Source: Imagery, USDA NAIP, 2012

- Perimeter Dike Alignment
- Fuel Lines
- Runway Protection Zone
- Airport Boundary
- Existing Buildings
- Existing Airfield Pavement
- Existing Apron Pavement

0 1,000 2,000 FEET

PROJECT AREA

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 2-2

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2.2.2 DESCRIPTION OF THE EXISTING PERIMETER DIKE

The perimeter dike from Station 0 to 250 (shown on **Figure 2-2**) forms the boundary between OAK and San Francisco Bay. The perimeter dike runs approximately 4.5 miles along the Airport boundary, and extends approximately 1,500 feet outside the Airport to the east, onto lands owned by the City of San Leandro. The western end of the perimeter dike connects to Harbor Bay Parkway in Alameda. The perimeter dike was constructed in three phases beginning in the late 1950s, and was completed in the 1970s. Some portions of the dike were constructed of sand and gravel, and some were constructed of clay. The dike fill is underlain by soft to medium-stiff silty clay—or Young Bay Mud (YBM)—along the dike alignment, except at the western end, where it is underlain by predominantly clayey sand/silty sand. The thickness of YBM ranges from 0 to 25 feet. The thickest YBM layer was encountered near Station 170 (URS, 2015).

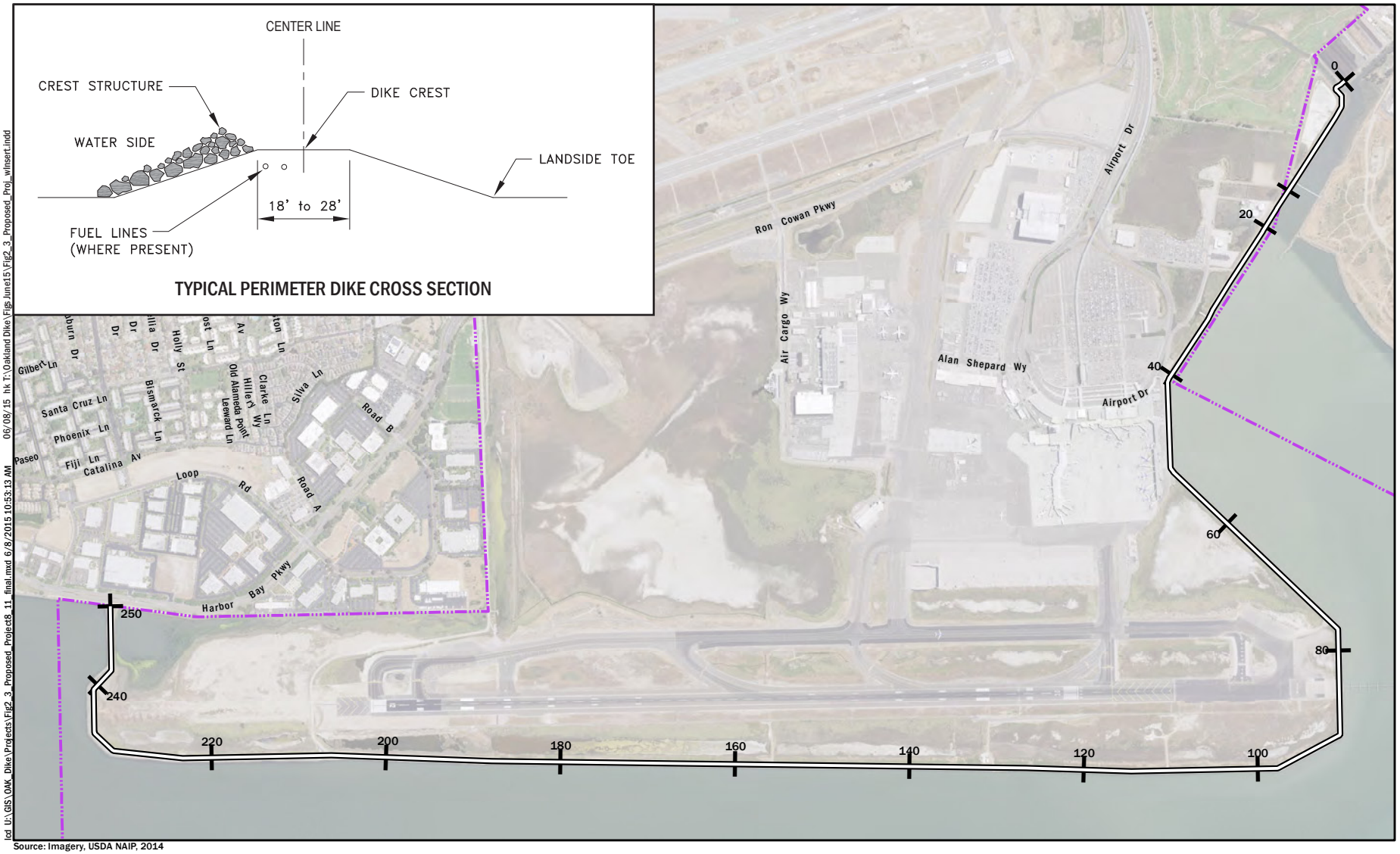
As shown on **Figure 2-3**, there is a gravel service road at the crest (i.e., top) of the dike, and a concrete rubble berm (also known as a crest structure) on the San Francisco Bay (or outboard) side of the dike. The surface of the service road is approximately 9 to 13 feet above mean sea level (msl). The width of the service road varies from about 18 to 28 feet. The Port maintains the road through the addition of aggregate base materials (crushed concrete) produced under its OAK Materials Management Program, or from materials that are imported from sources outside of OAK (Herman, 2013). Based on the field investigations, the thickness of these materials or other gravel materials is in the range of 4 to 5 feet in many portions of the dike.

At its peak, the crest structure varies from 10.5 to 17.5 feet above msl. Portions of the inboard (i.e., landside) side of the perimeter dike are covered with vegetation. The inboard side of the perimeter dike is adjacent to non-tidal wetlands under the jurisdiction of the USACE. The majority of these wetlands were created as a result of inadequate or incomplete filling behind the dike at elevations lower than San Francisco Bay when the airfield was constructed; ongoing seepage;[5] and stormwater runoff. The outboard side of the perimeter dike is covered with broken concrete rubble (riprap). The public has access from a parking lot on Harbor Bay Parkway to a recreational area with benches on the western end of the perimeter dike.

The dike portion between Stations 0 and 15, shown on **Figure 2-2,** currently does not have a crest structure, nor does it meet the FEMA requirements for 100-year flood protection. Two other portions along the perimeter dike (approximately between Stations 80 and 90 and Stations 243 and 250) do not have a crest structure. The remaining dike portions have a crest structure and erosion protection on the outboard slope that is a combination of broken concrete rubble and natural rock riprap laid directly on top of the dike fill, without a filter fabric or bedding layer to prevent erosion of the underlying fill materials.

The 100-year TWL at the exposed western portion of the dike is currently 13.55 feet, and would rise to 18.24 feet, assuming 4.59 feet of sea-level rise by 2100 (URS, 2015). The TWL at the relatively sheltered eastern portion of the dike varies from 12.53 feet at Station 80 to 12.07 feet at Station 20, which includes an estimated 4.59 feet of sea-level rise (URS, 2015).

[5] Seepage refers to water flowing through the perimeter dike structure.



Source: Imagery, USDA NAIP, 2014

Perimeter Dike Alignment

Airport Boundary

0 1,000 2,000 FEET

PERIMETER DIKE ALIGNMENT

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
Oakland, CA

28067727

URS

FIGURE 2-3

Currently, there are five fuel pipelines below portions of the service road on the crest of the perimeter dike (**Figure 2-3**). Two of the fuel pipelines are active, and three are inactive. The two active pipelines are 10 and 12 inches in diameter, respectively. Owned by SFPP, L.P./Kinder Morgan Energy Partners, L.P. (SFPP/KMEP), the two active pipelines were installed in 1968, and became operational in 1969. The 10-inch pipeline is currently used for multi-product fuel, and the 12-inch pipeline is currently used for jet fuel to supply San Francisco International Airport. These pipelines are situated in the perimeter dike, extending from beyond the eastern limit of the Proposed Project (Station 0, shown on **Figure 2-2**) to a point near the western end of Runway 12/30 (Station 203, shown on **Figure 2-2**), then turning to the south and extending into San Francisco Bay. The active pipelines are separated by between 1.6 and 5.2 feet, and are between 0 and 18 feet to the inboard of the outboard edge of the service road at 2.7 and 6.2 feet, respectively, below the crest of the dike. Any future maintenance work for these pipelines would be conducted in compliance with the Right-of-Way Use Permit Agreement between the Port and SFPP/ KMEP, dated July 1, 2014, which describes the required environmental reviews and BMPs applicable to working on or near fuel pipelines.

One of the three inactive pipelines is a 6-inch pipeline installed by the Port that starts at the fuel tank farm and runs along the dike between Stations 26 and 52. The other two inactive pipelines are 8- and 10-inch-diameter Shell Pipeline Company (Shell) pipelines, installed before the SFPP/KMEP pipelines and out of service since 2006. The inactive 8-inch pipeline starts at the fuel tank farm near Station 26 and runs along the perimeter dike to the south. The inactive 10-inch pipeline is also situated in the perimeter dike, extending from beyond its eastern limit (Station 0) to a point just south of the eastern end of Runway 12/30 (Station 90), and extending into San Francisco Bay. The two inactive Shell pipelines are being removed by Shell, and this separate project is anticipated to be completed by August 30, 2015 (Herman, 2015a). Removal and handling of the Shell pipelines will be conducted in compliance with the Right-of-Way Use Permit Agreement between the Port and the Shell Oil Company, dated August 1965.

2.2.3 FEMA REQUIREMENTS

The perimeter dike was accredited by FEMA in the 1980s. The accreditation certified that the perimeter dike provided the Airport with adequate protection against a 100-year flood event. As part of a decade-long program to modernize the system of Flood Insurance Rate Maps (FIRMs), FEMA implemented re-mapping efforts throughout the United States, including Alameda County. This resulted in preparation of a provisional FIRM for Alameda County, which FEMA published in 2009. On the provisional FIRM, the outboard side of the perimeter dike is mapped as a Special Flood Hazard Area subject to inundation by the 100-year flood event. The remainder of the Airport is shown as protected from the 100-year flood event by a provisionally accredited levee (i.e., the perimeter dike).

FEMA has also initiated a second study of flood hazards in Alameda County, and in 2014 issued a draft FIRM that included revised wave height and base flood elevations for San Francisco Bay. The Proposed Project would upgrade the perimeter dike in a manner consistent with the FEMA requirements for the protection of the Airport against a 100-year flood. The proposed design considers the TWL as documented in the FEMA 2014 FIRM.

2.2.4 RESPONSE TO SEISMIC EVENT

The Airport is in a seismically active region between the San Andreas and Hayward faults. During the 1989 Loma Prieta earthquake, liquefaction-induced settlement and deformation were documented at several places along the perimeter dike (URS, 2009). According to a liquefaction susceptibility analysis conducted in 2011, about 70 percent of the sand dike fill materials are susceptible to liquefaction (URS, 2011).

2.2.5 ANALYSIS OF THE PERIMETER DIKE EXISTING CONDITIONS

In response to FEMA's 2009 request, the Port completed a Vulnerability Assessment Report (VAR) that included soil investigations, data reviews, assessment of existing and projected coastal conditions, and engineering analysis to evaluate the vulnerability of the existing perimeter dike to both the 100-year flood event and to seismic events (URS, 2009). The 2009 VAR documented that the existing dike:

1. May be susceptible to seepage during a 100-year flood event;
2. Includes segments that do not meet current requirements for FEMA certification;
3. Includes segments (i.e., those constructed of sand and gravel) that may liquefy during criteria seismic events;[6] and
4. Includes segments (i.e., those constructed of sand and gravel) that may deform and settle during criteria seismic events.

After completing the VAR, the Port prepared an Improvement Strategy Report that developed and analyzed preliminary alternatives to improve the perimeter dike to obtain FEMA certification of protection for the 100-year flood event, and to achieve acceptable seismic performance (URS, 2010). The Proposed Project represents the alternative that would meet the purpose and need, and result in the fewest and least significant adverse impacts on environmental resources.

2.3 EXISTING SETTING – REGIONAL AND LOCAL

The Proposed Project site is in the East Oakland Area in the City of Oakland, as defined by the General Plan of the City of Oakland. The City of Oakland is bounded by the cities of Berkeley and San Leandro to the north and south, respectively. San Francisco Bay and the island of Alameda bound the City of Oakland to the west. The East Oakland Area comprises Central East Oakland, Elmhurst, and the Airport, and is characterized by a mix of detached housing units and mixed housing types outside the Airport environs; open space and recreational areas; I-880 and service industrial and commercial areas.

Regional access to the Airport is provided by I-880. Major roadways serving OAK include Hegenberger Road, 98th Avenue, Doolittle Drive (State Route 61), Harbor Bay Parkway, Ron Cowan Parkway, and Davis Street (State Route 61).

[6] The 1,000-year seismic event (an event with 10 percent chance of exceedance in 100 years) was selected as the design criteria event, and is similar to the design criteria for other nearby projects such as OAK Terminal 2.

2.4 EXISTING SETTING – PROJECT SITE

OAK, owned and operated by the Port, provides airfield, terminal, and support facilities for commercial flights, air charter/taxi operations, air cargo, military, and general aviation operations. The original Airport was built in 1927 at North Field, and is still in operation today, serving smaller aircraft for air cargo, and general aviation. Commercial passenger, corporate jet, and cargo jet aircraft operate from South Field, which opened in 1962.

According to the City of Oakland General Plan, the Airport is in the Seaport and Airport/Showcase District, which serves to attract related and compatible commercial and industrial uses. The planned land uses in the area of the Airport are consistent with existing land use patterns, and land use changes in this part of Oakland are not anticipated.

Figure 2-2 shows a map of the existing pavement and buildings at OAK. The largest aviation land use at OAK is Airfield, which is approximately 1,078 acres. South Field (defined as the Airport area south of Ron Cowan Parkway, and including Runway 12/30) is dominated by passenger facilities (approximately 208 acres), including Terminals 1 and 2, and air cargo facilities (approximately 104 acres). The perimeter dike forms the boundary between OAK and San Francisco Bay. The San Francisco Bay Trail (Bay Trail) is to the northwest and east of the Airport.

2.5 PROJECT DESCRIPTION

The key components of the perimeter dike improvements address the FEMA requirements for 100-year flood protection outlined in Title 44, Chapter 1, Section 65.10 of the CFR (44 CFR 65.10). Improvements also address seismic hazards of the sand portion of the dike. Proposed improvements would be constructed only where needed along the perimeter dike, as shown on **Figure 2-3**, and as described in the following subsections.

2.5.1 100-YEAR FLOOD PROTECTION

The proposed improvements would meet the 100-year flood protection requirements, including raising the dike crest, improving and raising the crest structure, controlling through-seepage, and improving the inboard slope of the dike.

Raising the Dike Crest

To comply with the FEMA requirements, the water retention portion of the dike should have a minimum crest elevation of the 100-year SWL of 10 feet, and an additional 2 feet of freeboard. The current FEMA freeboard requirement does not include a provision for sea-level rise. However, for the Proposed Project, the Port has adopted design criteria to include a provision of 1 additional foot of freeboard over that required by FEMA to address potential future sea-level rise. Therefore, the total design dike crest elevation would be approximately 13 feet. There are several areas where the existing dike crest has an elevation of less than 13 feet, and would need to be raised. In addition, to account for settlement of the Young Bay Mud underlying the dike, the crest of the dike would be raised an additional 0.25 to 0.75 foot, depending on the thickness of the Young Bay Mud underlying the dike. Raising the crest would consist of

placing up to approximately 4 feet of earth fill on the dike. The width of the dike would be maintained at a minimum of approximately 18 feet. In addition to earth fill, a 12-foot-wide, 6-inch-thick layer of aggregate base would be placed on top of the dike crest to allow for the continued use of the structure as an Airport maintenance and access road.

Raising the dike crest would be performed by using impervious earth fill materials that are suitably strong for use as a sub-base for the gravel-surfaced access road. Types of earth fill materials may include low-plasticity clays, clayey sands, and clayey gravel materials.

Improving the Crest Structure

The 100-year TWL at the perimeter dike ranges from 12.1 feet east of Station 20; between 12.1 and 12.5 feet from Station 20 to Station 89; to 13.6 feet from Station 89 to Station 250. As indicated above, the total design crest structure elevation would be approximately 2 feet greater than the TWL, and would range between 14 feet and 16 feet. Based on a comparison of the design elevation and the existing elevation, the crest structure would need to be raised by up to approximately 4 feet to meet the FEMA criteria, and to address sea-level rise (URS, 2015).

To meet the FEMA requirements of the minimum elevation of the crest structure, two methods of improvements would be implemented, depending on the condition of the dike.

Raising the Crest Structure. At the eastern end of the Proposed Project site (between Stations 0 and 15), where the perimeter dike is outside the Airport on lands owned by the City of San Leandro, there is no existing crest structure. Based on the required design elevation and the existing dike elevation, the dike structure would need to be raised by 3 feet. Proposed improvements to this segment would be to raise the dike and the riprap structure by approximately 3 feet; install a new riprap crest structure similar to that of the Port's portion; or install a wave protection wall (either vinyl sheet pile or precast concrete).

Proposed improvements to the crest structure between Stations 15 and 250 would include placement of riprap or concrete rubble to build up the existing crest structure where it is lower than the design elevation, and to cover areas of the outboard slope of the perimeter dike that were identified as deficient. The deficiencies include areas where the rubble is thin or not present, exposing the dike fill to direct wave impact. The riprap material would be natural rock or recycled concrete, and the top of the crest structure would be approximately 3 feet wide and cover an area of approximately 7,405 square feet.

Armoring of the Dike Crest. There are two areas of the perimeter dike where raising the crest structure would not be feasible:

- The runway safety zone (RSZ) at the eastern end of Runway 12/30 (approximately between Stations 80 and 90). This portion of the dike does not have a crest structure due to Federal Aviation Administration (FAA) regulations related to visual guidance lighting systems; and
- The western end of the dike (approximately between Station 243 to 250). This portion of the dike does not have a crest structure, and tidal water is present on both sides of the dike. The dike footprint would need to be widened at this location to either add a crest structure similar to the rest of

the dike, or to raise the dike. Installing a crest structure between those stations would require placement of a substantial amount of rock fill on the outboard side of the dike, which would impact the San Francisco Bay waters. It was therefore deemed undesirable.

Instead, the RSZ at the eastern end of the runway (between Stations 80 and 90) and the western end of the perimeter dike (between Stations 243 and 250) would be armored for protection against erosion that could result from waves washing over the dike crest during a 100-year flood event. The dike would be armored by installing riprap on its crest. The elevation of the top of the armor would be approximately 13 feet. The benches and trash receptacles currently present on that portion of the dike would be replaced after the dike has been raised and armored.

Control of Through Seepage

The sand portions of the dike where through-seepage is present would be improved by the construction of a soil-cement block, a seepage cutoff wall, or a drainage system.

- The soil-cement block would be installed to control seepage, and for seismic improvements, on the outboard side—where the fuel lines are located—between Stations 70 and 80, and between Stations 168 and 202. The depth of the soil-cement block would range between approximately 12 feet and 39 feet below existing ground surface (see **Figure 2-4**).

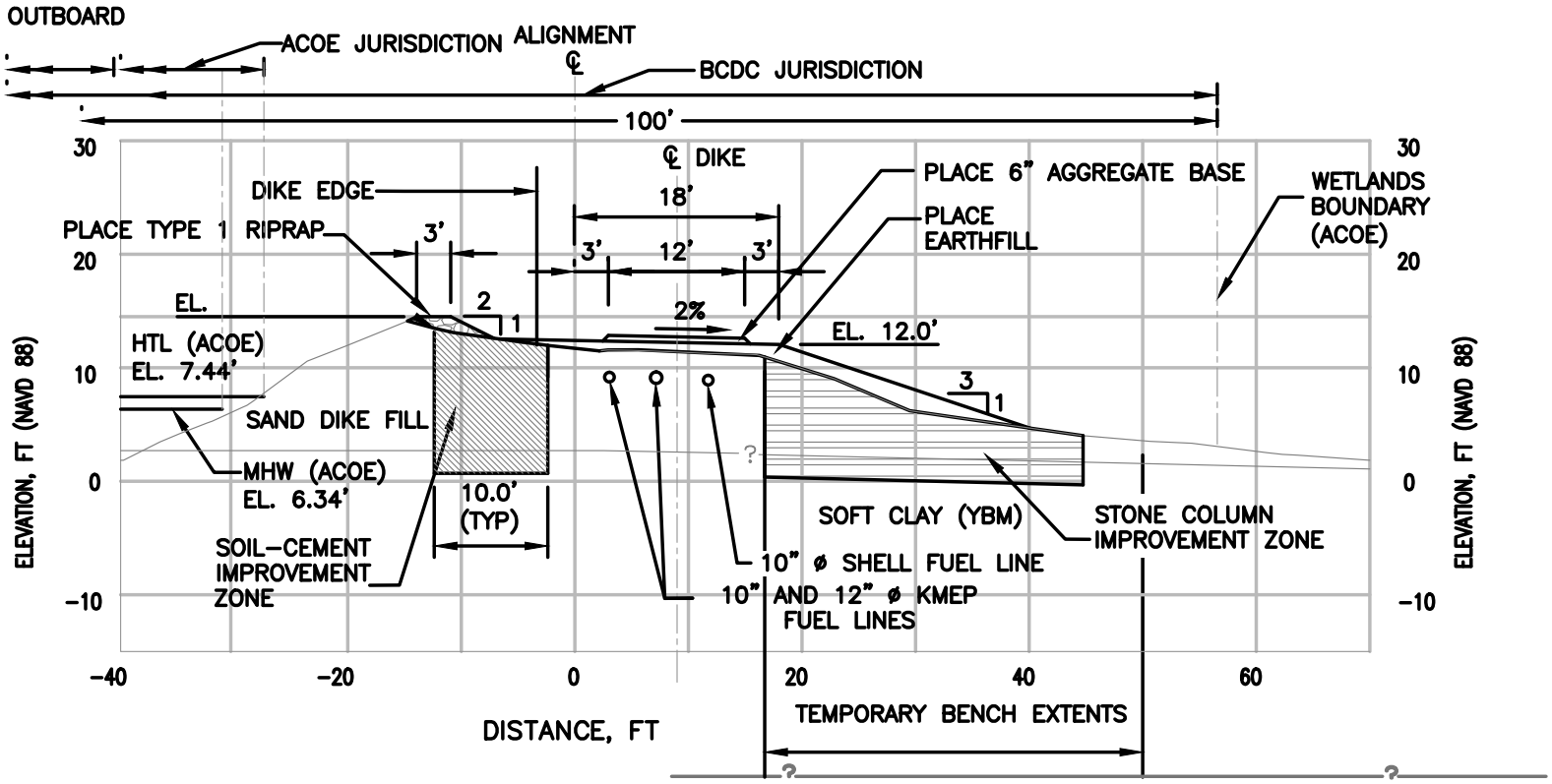
- The seepage cutoff wall would extend from the crest of the dike through the permeable dike fill to approximately 2 feet into the underlying YBM. The wall would be constructed between Stations 203 and 250. The cutoff wall would be constructed as a slurry wall, and the depth would range between approximately 14 and 39 feet below existing ground surface (see **Figure 2-5**).

- A drainage system would be used in the sand dike at locations that do not require seismic improvement, and include fuel lines (between Stations 38 and 40). The drainage system would include cutting back a portion of the inboard slope of the dike, installing a chimney (vertical drainage filter) and blanket drain (used to disperse seepage drainage), and replacing the inboard slope of the dike (see **Figure 2-6**). Excavation of the inboard slope of the dike would not extend below the groundwater level, and so would not require dewatering.

Improvements of Inboard Slope of the Dike

Stability analyses indicated that portions of the dike do not meet the design requirement for 100-year flood protection (URS, 2015). For these portions, a stability berm or a shear panel[7] would be constructed. Construction of a stability berm would be at locations where permanent impacts to wetlands adjacent to the dike toe would be minimized. In locations where permanent impacts to wetlands using a stability berm could be significant (between Stations 54 and 75), shear panels would be installed (See **Section 3.IV-c**, Biological Resources, for a discussion on potential impacts to jurisdictional wetlands).

[7] Shear panel: A shear panel is a wall that is designed to counteract lateral stress in a structure, ensuring that the structure remains sound even when it is subjected to shear stress.



TYPICAL COMBO CREST/DIKE RAISE (WITH SEISMIC IMPROVEMENT)

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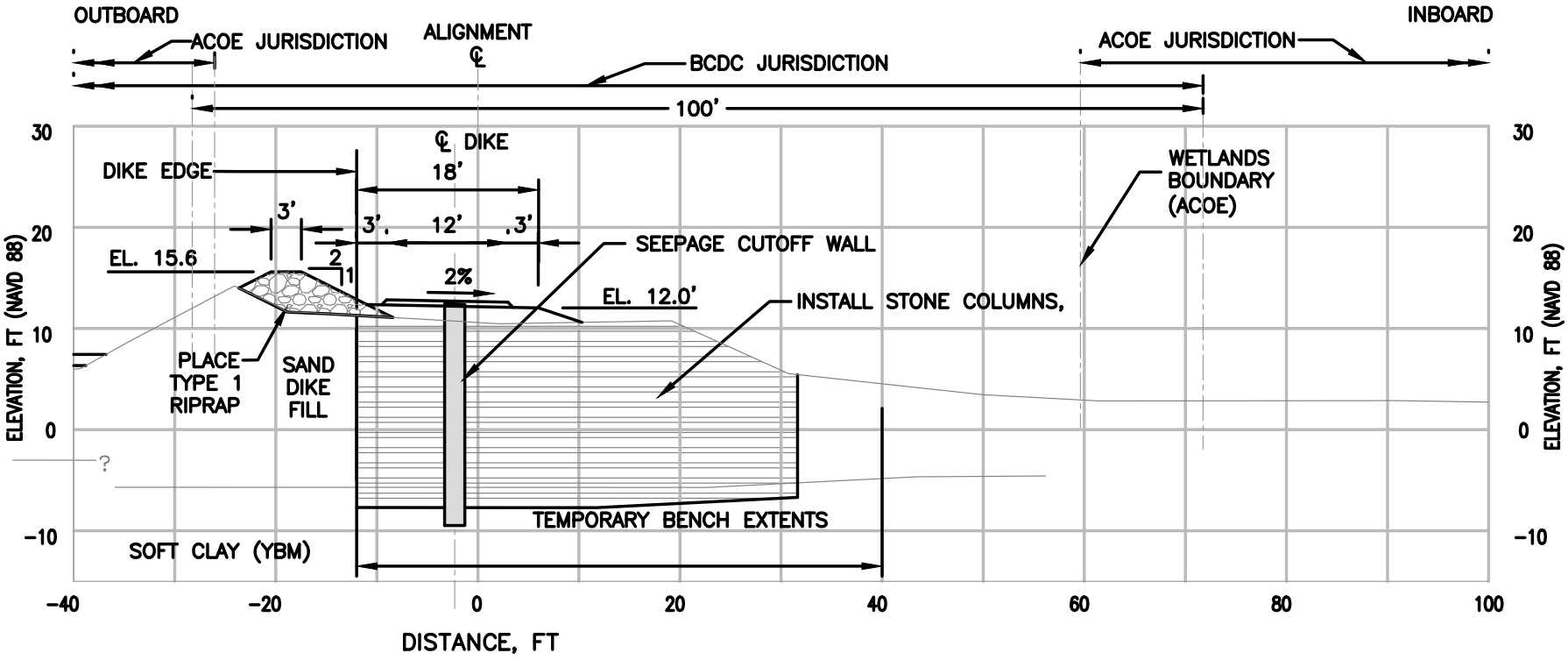
SOIL-CEMENT BLOCK

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 2-4



TYPICAL CREST/DIKE RAISE (WITH CUTOFF WALL & SEISMIC IMPROVEMENT)

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SEEPAGE CUTOFF WALL

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Oakland International Airport
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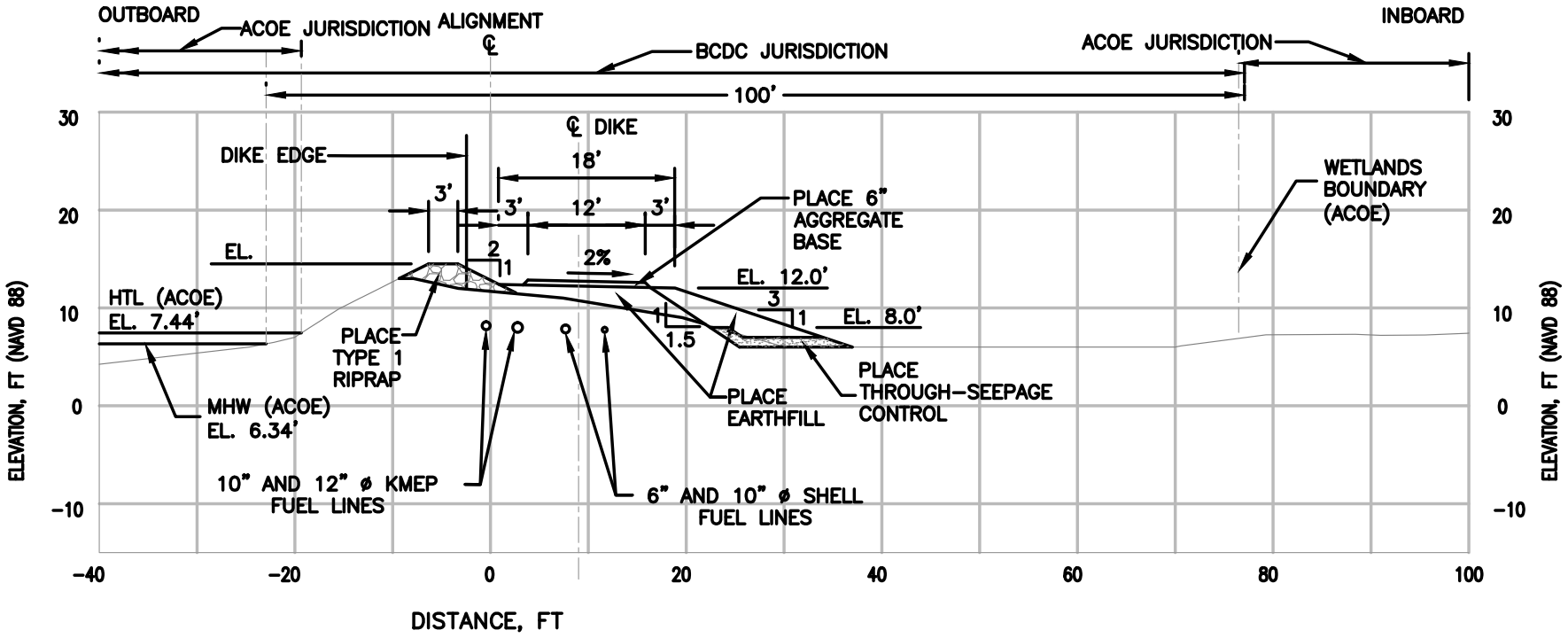
FIGURE 2-5



TYPICAL COMBO CREST/DIKE RAISE AND THROUGH-SEEPAGE CONTROL

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DRAINAGE SYSTEM

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FIGURE 2-6

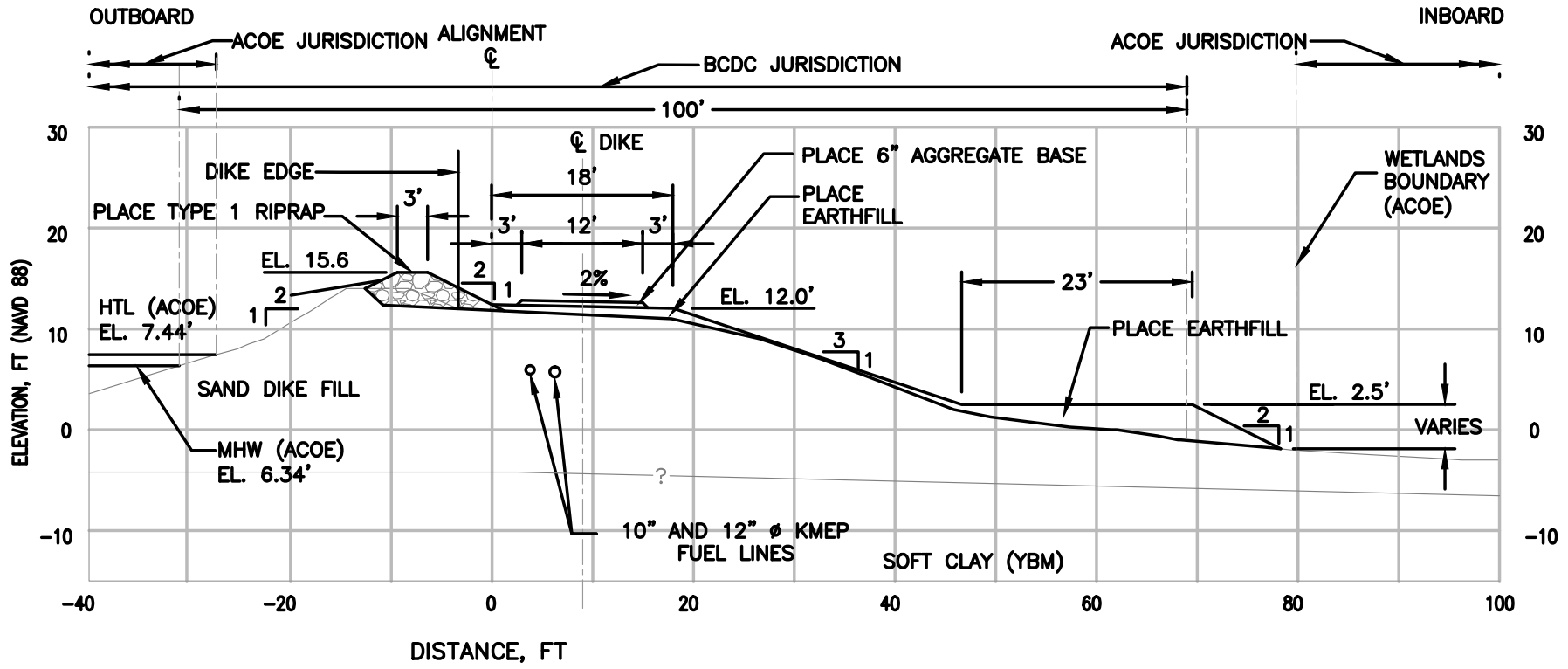
- Stability Berm: Approximately 8,300 linear feet of earth fill stability berm would be constructed in two segments on the inboard side of the dike, between Stations 20 and 38 and between Stations 120 and 188. The berm between Stations 20 and 38 would be up to approximately 7.5 feet high and up to 40 feet wide, and would have a finished grade elevation of approximately 5.5 feet. The berm between Stations 120 and 188 would be up to approximately 6 feet high and up to 35 feet wide, and would have a finished grade elevation of approximately 2.5 feet. The foundation of the stability berm would be cleared of vegetation and grubbed to 6 inches below the ground surface. Topsoil would be removed to a depth of approximately 6 inches, and stockpiled in the staging area for placement on the stability berm after completion (see **Figure 2-7**).

- Shear Panels: Installation of the shear panels between Stations 54 and 75 would require construction of a temporary working earthen-berm platform that would temporarily impact wetlands adjacent to the dike toe. The foundation of the temporary platform would be cleared of vegetation and grubbed to 6 inches below ground surface. Topsoil would be removed to a depth of approximately 6 inches, and stockpiled in the staging area for replacement after shear panel construction is completed and the temporary platform is removed. The soil-cement shear panels would extend through the dike fill and YBM to approximately 2 feet into the underlying Merritt/Posey Sand. Based on geotechnical investigations (URS, 2011), the depth of the soil-cement shear panels would range between approximately 19 feet and 21 feet (elevation -15 feet and -17 feet) (see **Figure 2-8**).

2.5.2 Remediation of Seismic Deformations

Seismic improvements to the sand portions of the dike would include replacement stone columns where pipelines are not present between Stations 203 and 250 (see **Figure 2-5)**; and where pipelines are present between Stations 70 and 80 and between Stations 168 and 203, a soil-cement block outboard of the pipelines and replacement stone columns inboard of the pipelines (see **Figure 2-4**). Both soil treatment methods would extend through the sand fill to approximately 2 feet into the underlying YBM. Based on geotechnical investigations (URS, 2011) and the dike geometry, the depth of treatment would range between approximately 12 and 39 feet below the existing ground surface along the dike crest.

Installation of stone columns involves the displacement of soil as stones are vibrated or compacted into columns. A vibrating shaft with an attached pipe and a cutting tip would penetrate the ground and displace soil as it descended to the desired depth. Once at the base depth, the shaft would retreat, and stone would simultaneously empty from the attached pipe into the soil. During the extraction, the stone fill would be subjected to high-frequency vibrations and lateral pressure that would result in high-density stone columns. The columns would be placed in multiple rows along the interior of the perimeter dike, creating a stable substructure. To reduce the potential for ground heave during the installation of stone columns, the installation equipment would feed stone at the bottom of the probe; lower vibrations would be used for installing columns nearest the pipelines; installation equipment would be used with real-time monitoring for penetration rate and stone feed rate; and open boreholes would be installed, to act as a cushion between the pipelines and the stone columns.



TYPICAL COMBO CREST/DIKE RAISE AND STABILITY BERM EL. 2.5

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STABILITY BERM

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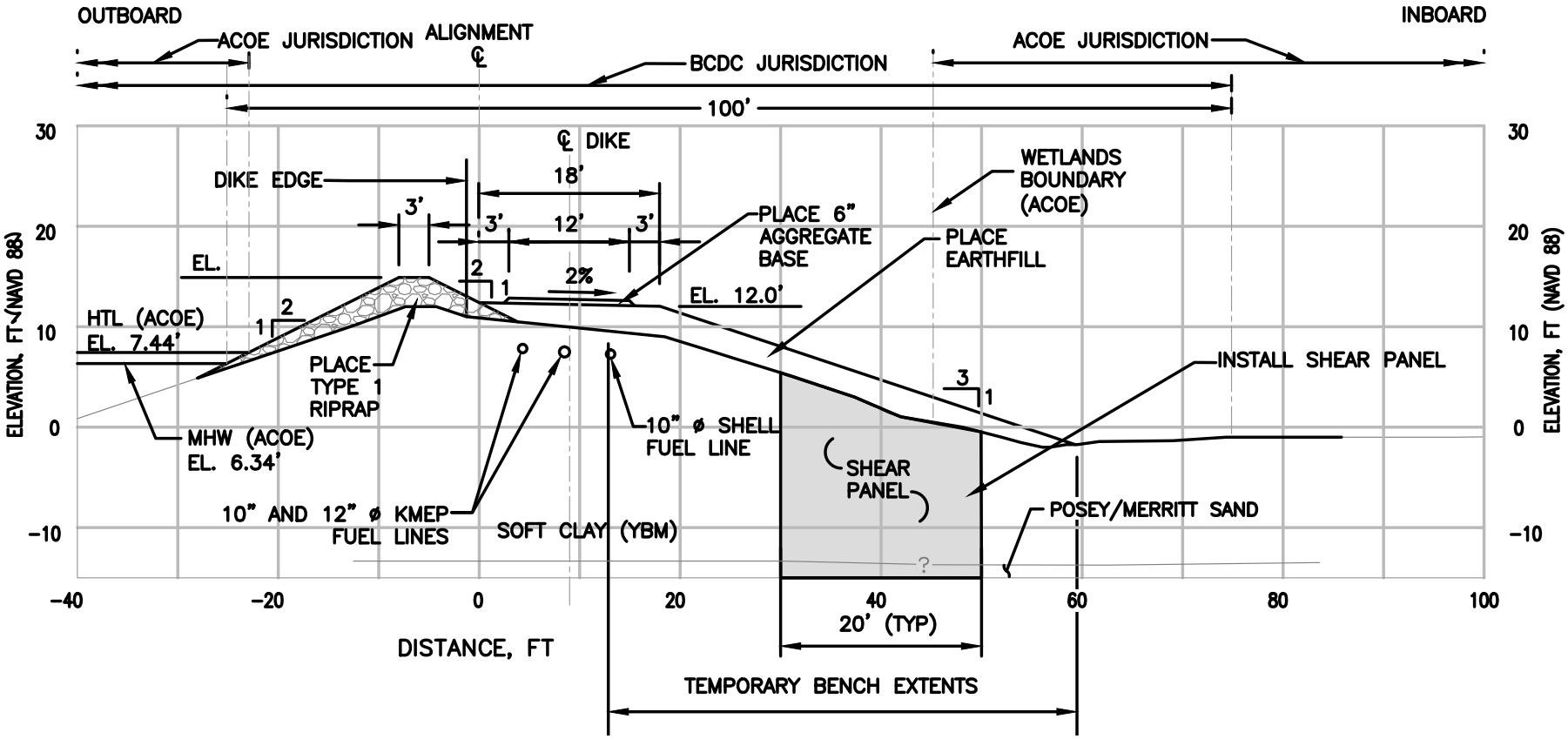
FIGURE 2-7



TYPICAL COMBO CREST/DIKE RAISE (WITH SHEAR PANELS)

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SOIL-CEMENT SHEAR PANEL

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 2-8

Installation of the stone columns or the soil-cement block would require construction of a temporary working platform on the landside of the dike from which construction equipment would operate. The temporary platform would temporarily impact wetland adjacent to the dike toe. The foundation of the platform would be cleared of vegetation. Topsoil would be removed to a depth of 6 inches.

2.5.3 STAGING AREA, ACCESS ROUTES, AND DISPOSAL SITE

Staging and stockpiling associated with the Proposed Project would occur on the existing dike, at the Port's Materials Management Site (MMS) south of Ron Cowan Parkway on the air operations area of OAK, and at the construction staging area near the South Field Tank Farm at the end of Sally Ride Way, OAK (shown on **Figure 2-9**). The staging area at the MMS would be used for the following:

- Contractor's field office.
- Parking for contractor's personnel.
- Parking for construction equipment (fueling for most vehicles would be done in the staging area).
- Stockpiles for riprap, aggregates, earth fill, spoils from installation of soil-cement, and other construction materials.

The staging area near the South Field Tank Farm would be used for stockpiles for riprap, aggregates, earth fill, and other construction materials. Construction access would be limited to existing Airport roads, and would be from the western and eastern ends of the perimeter dike (shown on **Figure 2-9**). The western end would be accessed by a one-lane unpaved road that begins at the C2A Gate at the corner of Air Cargo Road and Ron Cowan Parkway, runs along Ron Cowan Parkway past the MMS, and allows access to Runway 10/30 and the Perimeter Dike. The eastern end would be accessed from Ron Cowan Parkway to Neil Armstrong Way, with access through a security gate at the corner of Neil Armstrong Way and Sally Ride Way (shown on **Figure 2-9**). Vehicular traffic along the perimeter dike road is monitored by Airport operations, and permission is required from the Air Traffic Control Tower (ATCT) to cross through the RSZ at either end of Runway 10/30. Vehicles are required to stop outside the RSZ and obtain clearance prior to crossing the RSZ.

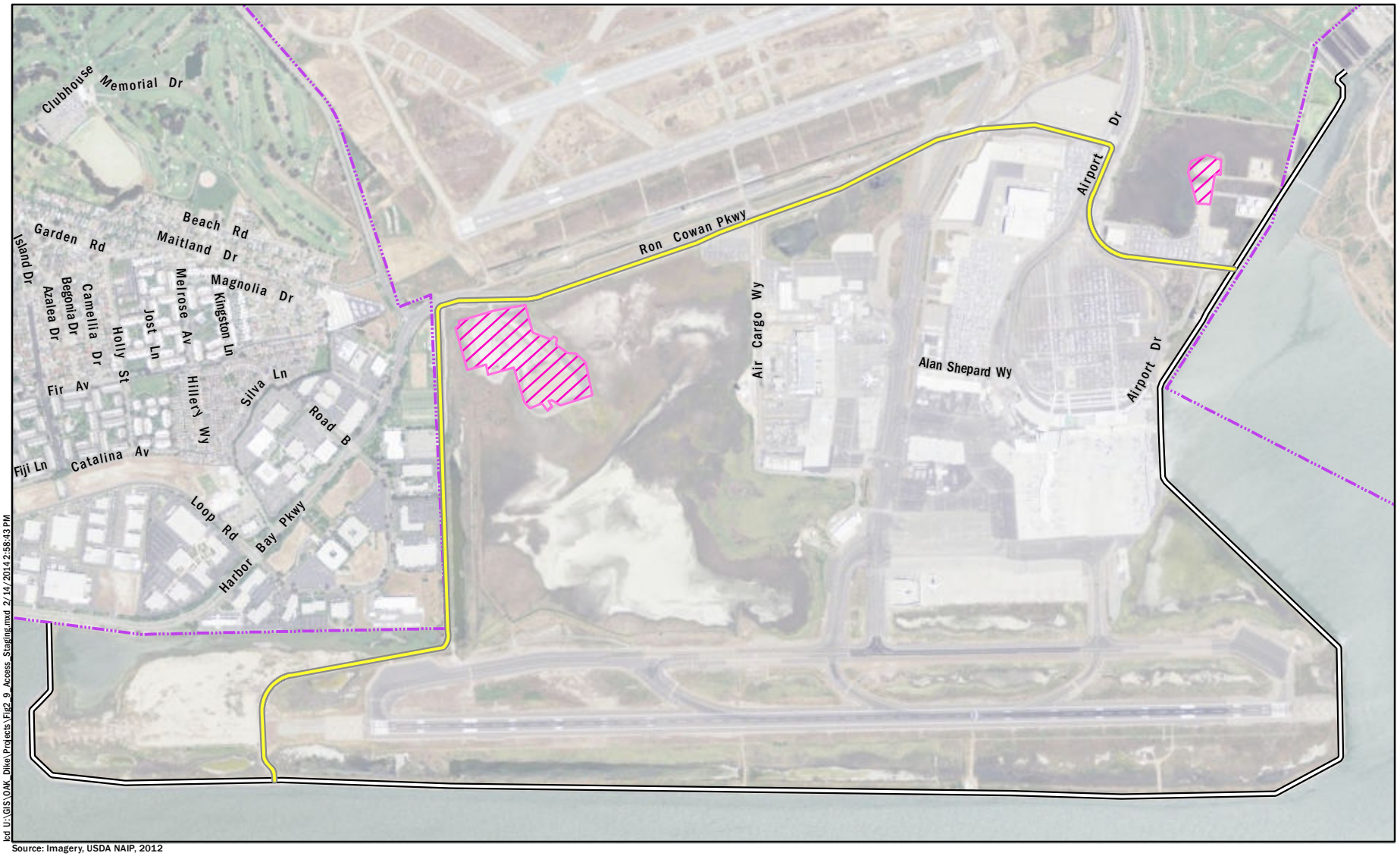
Construction debris that could be reused by the Port, such as soil-cement spoil and soil and rock materials, would be stockpiled on the dike or one of the staging areas for future use. Excavated soil would be analyzed for the presence of contaminated materials, and disposed of appropriately. Other debris, such as cleared vegetation, would be disposed at the MMS, or off site at approved landfills.

2.5.4 CONSTRUCTION CREW AND SCHEDULE

The proposed improvements would require concurrent work by up to six work crews:

- Two earthwork crews (a total of seven workers per crew);
- Two stone-column installation crews (a total of five workers per crew); and
- Two soil-cement columns crews (a total of five workers per crew).

The perimeter dike improvements outlined in **Sections 2.5.1** and **2.5.2** would be constructed in phases over a number of years, and would start as early as 2016. The estimated total construction time is approximately 28 months.



Source: Imagery, USDA NAIP, 2012

Perimeter Dike Alignment
Access Route
Staging Area
Airport boundary

0 1,000 2,000 FEET

ACCESS ROUTE AND STAGING AREAS

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28067727 Oakland, CA

URS

FIGURE 2-9

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2.6 CONSTRUCTION BEST MANAGEMENT PRACTICES

The Proposed Project would include the following BMPs to avoid or minimize environmental impacts, which would be defined in the construction contract documents:

1. Temporary erosion control measures would be implemented as specified in the project-specific Storm Water Pollution Prevention Plan (SWPPP), as applicable. Stormwater runoff would be managed as required by the San Francisco Bay Regional Water Quality Control Board (RWQCB). The contractor will be required to comply with National Pollutant Discharge Elimination System (NPDES)/ No. 2010-0014-DWQ NPDES No. CAS000002 (General Construction Permit).

2. Equipment staging, material storage, and stockpile areas would be in upland areas so as not to affect jurisdictional wetlands, or any other sensitive habitat.

3. A plan for the emergency cleanup of any spills of fuel or other materials would be prepared and implemented by the contractor.

4. Erosion and sediment control BMPs would be installed prior to the start of any ground-disturbing activities, as detailed in the SWPPP.

5. Silt fences or fiber rolls would be installed, or other suitable measures would be implemented around the perimeters of the construction zone, staging areas, temporary stockpiles, and drainage features, as detailed in the SWPPP.

6. If dewatering of excavations is necessary, the discharge rate would be regulated, energy dissipation device(s) would be used, and sediment barriers would be installed, as necessary.

7. Water produced by construction site dewatering would be detained and treated using sedimentation basins located on the project site, sediment traps (when water is flowing and there is sediment), or other measures, to ensure that discharges to receiving waters are in accordance with the State of California General Permit for Storm Water Discharges Associated with Construction Activity (General Permit).

8. Stockpiles would be located a minimum of 50 feet away from concentrated flows of stormwater, water bodies, ditches, and inlets. All stockpiles would be contained using perimeter controls such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers. All stockpiles would be covered with polyethylene plastic sheeting or other impermeable materials.

9. BMPs would be identified in the contractors SWPPP to prevent raw cement; concrete or concrete washings; asphalt; paint or other coatings; and oils or other petroleum products from entering watercourses or storm drains. All concrete waste and wash water would be either returned with each concrete truck for disposal at the concrete batch plant or disposed at a dedicated disposal area at the MMS. All concrete wash water would be contained until dried, and then disposed within the MMS and crushed to make aggregate base.

10. Construction vehicles and equipment would be inspected to prevent discharge and contamination of soil or water (from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease).

11. Equipment would be refueled and serviced at designated construction staging areas.

12. Discharge of pollutants into water bodies from vehicles and equipment would be avoided by using drip pans, spill kits, berms, and secondary containment.

13. Sanitary facilities would be placed at a minimum of 200 feet from water bodies.

14. Sanitation facilities (e.g., portable toilets) would be placed in containments to prevent discharges of pollutants to the stormwater drainage system or receiving water.

15. Sanitary facilities would be maintained regularly.

16. Hazardous materials would be stored in an area protected from rainfall and stormwater run-off, and prevent the offsite discharge of leaks or spills.

17. All debris materials, sediment, trash, vegetation, or other material removed from the disturbed areas would be disposed of at an approved disposal site.

18. Non-tidal wetlands and waters of the United States (waters of the U.S.) to be avoided would be marked in the field.

19. A Construction site Safety Plan would be developed to provide a formal, top-down, systemic approach to identify safety risk, organizational structures, responsibilities, and policies and procedures.

20. <u>The Port would coordinate with the City of San Leandro construction activities of the perimeter dike's that would occur within the City of San Leandro's boundaries.</u>

2.7 PROJECT APPROVALS AND PERMITS

It is anticipated that the Proposed Project would require the following agency approvals and permits:

1. USACE Clean Water Act (CWA) Section 404 Permit;
2. United States Fish and Wildlife Service (USFWS) Federal Endangered Species Act (FESA) Section 7 consultation and no effect concurrence from National Marine Fisheries Service (NMFS);
3. California Department of Transportation (Caltrans) Amended Airport Permit;
4. San Francisco RWQCB CWA Section 401 Permit Water Quality Certification/Waste Discharge Requirements for placement of fill in waters of the state;
5. NPDES/No. 2010-0014-DWQ NPDES No. CAS000002 (General Construction Permit); and
6. San Francisco Bay Conservation and Development Commission (BCDC) Permit, and consistency determination under the Coastal Zone Management Act.

CHAPTER 3.0
ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the Proposed Project. The following pages present a more detailed checklist and discussion of each environmental factor.

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

DETERMINATION:

On the basis of this initial evaluation:

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

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

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

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

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects 1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and 2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Signature _____ Date _____

Signature _____ Date _____

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		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS					
Would the project:					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d)	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

The Airport is located along the estuary shoreline, and forms a visual city-edge feature; the buildings on the Airport property are a visual symbol. The Airport is part of the Seaport and Airport/Gateway Showcase District, as identified in the Land Use and Transportation Element of the Oakland General Plan, which envisions Hegenberger Gateway as a regional attraction. Land use policies support the continued development of the Airport and related uses (Community and Economic Development Agency, 1998).

a) Scenic Vista

Scenic resources near the project area include the ridgeline of the Oakland-Berkeley Hills on the east, and the estuary shoreline and San Francisco and San Leandro bays on the west and south. Views from the Airport consist primarily of San Francisco Bay to the west and southwest; Mission Peak and Fremont Hills farther to the southeast; open parks and golf courses to the northeast and northwest; views of industrial, commercial, and residential development toward the east—with the Oakland-Berkeley Hills farther east; and San Leandro Bay to the south. Views toward the Airport are available from residential neighborhoods in Alameda to the north; from surrounding recreational areas, including the Alameda Municipal Golf Course, Metropolitan Golf Links, Oyster Bay Regional Shoreline, and San Leandro Bay Regional Shoreline; and from commercial areas east of the Airport. However, because of the relatively level topography, views of the Airport in the immediate vicinity are limited. The Airport is visible from more distant locations, such as from the hills to the east. However, the visual character of the Airport is predominantly industrial in nature, and related to Airport use. There are no designated or identifiable scenic vistas from the project site.

The Airport site is level, with little or no discernible relief, which is necessary for operation of aircraft on the runways and taxiways. The elevation at the centerline of the service road at the crest of the dike varies between 9 and 14 feet. The elevation at the top of the crest structure varies between 10.5 and 17.5 feet. Raising the crest structure and dike crest as part of the proposed improvements would vary between 0 and 2 feet above the existing elevation of the perimeter dike, and would not be distinguishable

from the surrounding area. In addition, there are no designated or identifiable scenic vistas from the project site. Therefore, the Proposed Project would result in no impact to scenic vistas.

b) Scenic Resources

Neither the built nor the natural environment at the project site has any visual resources that would contribute to a scenic public setting. Therefore, no scenic resources would be affected by the Proposed Project.

The Proposed Project would not be visible from the closest state-designated scenic highway, Interstate 580 (I-580), approximately 4.5 miles east of the project site. The San Francisco Bay is the nearest scenic resource to the project site. However, the relatively minor increase in the height of the dike would not impact or alter views of the scenic resource. Most of the work on the dike is below ground surface. As such, implementation of the Proposed Project would have no impacts on scenic resources.

c) Visual Character

The visual character in the vicinity of the Airport is primarily characterized by commercial and industrial uses, and the open expanse of the Alameda Municipal Golf Course, the Metropolitan Golf Links golf course, and San Leandro and San Francisco bays. The Airport is characterized by the Airport facilities, surface parking, level graded surfaces, and paved runways. The perimeter dike is approximately 4.5 miles along the Airport's southwestern and southern boundaries; and includes a gravel service road at the crest, and a concrete rubble berm on the San Francisco Bay side. Raising the crest structure and dike crest as part of the proposed improvements would vary between 0 and 2 feet above the existing elevation of the perimeter dike, and when construction is completed, the perimeter dike would closely resemble its current appearance. The proposed improvements to the perimeter dike would not alter its current visual character, and would not degrade the visual character or quality of the project site and its surroundings. Therefore, the Proposed Project would have no impact on the existing visual character or quality of the site and its surroundings.

d) Light or Glare

Construction visual impacts resulting from grading activities and construction vehicles would be minor and not noticeable given the setting of the project site. Therefore, aesthetic impacts during construction activities would be less than significant. There are no lights at the perimeter dike, and the proposed improvements would not include installing new lights. The Proposed Project would not add to the existing Airport lighting, and therefore would not contribute to the light and glare impacts in the Airport and surrounding areas.

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

a-e) Agriculture and Forestry Resources

The project site is designated by the California Department of Conservation as "urban and built-up land," as shown on the Important Farmland Map for Alameda County (2010). Therefore, the Proposed Project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, and it would not conflict with existing zoning for agricultural land use or a Williamson Act contract, nor would it involve any changes to the environment that could result in the conversion of farmland. The Airport does not fall under the State PRC definitions of forest land[8] or timberland;[9]

[8] State PRC Section 12220 defines "forest land" as "Land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."

therefore, the Proposed Project would not conflict with zoning, or cause rezoning of forest land. Furthermore, the Proposed Project would not convert forest land to non-forest use. Therefore, the Proposed Project would have no impacts related to agricultural and forestry resources.

[9] State PRC Section 4526 provides the following definition for "timberland": Timberland means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

An air quality assessment and a qualitative health risk screening assessment were performed for the Proposed Project. The assessment and qualitative screening assessment were conducted in accordance with the Bay Area Air Quality Management District (BAAQMD) *California Environmental Quality Act* (*CEQA) Air Quality Guidelines*[10] (adopted on June 2, 2010, and updated in May of 2011) (BAAQMD, 2010a). The temporary (i.e., construction) and cumulative impacts related to the Proposed Project were analyzed and compared to the appropriate significance thresholds in the BAAQMD *CEQA Air Quality Guidelines.* The Proposed Project would not change the operational activities at Airport. After construction, use of the gravel service road at the crest of the dike would be the similar to the current use. Therefore, a long-term operational emissions inventory is not required.

a) Air Quality Plan

On September 15, 2010, the BAAQMD adopted the *2010 Bay Area Clean Air Plan* (BAAQMD, 2010b). The *2010 Clean Air Plan* updates the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement all feasible measures to reduce ozone; provide a control strategy to reduce ozone, particulate matter, air toxins, and greenhouse gases (GHGs) in a

[10] Although not currently legally binding, the BAAQMD CEQA Air Quality Guidelines provide a useful guidepost for establishing potentially significant air quality impacts. Specifically, the BAAQMD Guidelines provide a reliable approach for making a conservative air quality determination regarding GHG emissions and toxic air contaminants. With regard to GHG emissions and toxic air contaminants, the BAAQMD Guidelines are more conservative (more stringent) than most other air districts in California, and serve as a model for many other air districts. On March 5, 2012, the Alameda County Superior Court ordered the BAAQMD to set aside the Thresholds until the Air District had complied with CEQA. The legal matter is currently pending review before the California Supreme Court.

single, integrated plan; and establish emission control measures to be adopted or implemented in the 2010 through 2012 timeframe.

The primary goals of the *2010 Clean Air Plan* are to attain air quality standards, reduce population exposure and protect public health in the San Francisco Bay Area, and reduce GHG emissions and protect the climate.

The Proposed Project would be consistent with the *2010 Clean Air Plan* goals, and would not conflict with the primary goals of the *2010 Clean Air Plan*. Because construction activities would be temporary and short term, there would be 1) no significant increase in ambient concentrations of criteria pollutants; (2) no significant increase in exposure to toxic air contaminants; and (3) no permanent increase in long-term emissions of GHGs. The 2010 Thresholds for construction emissions were established to be consistent with the air quality attainment plans. Emissions from project construction activities would not exceed these thresholds, as detailed below, and would therefore be consistent with the applicable plans. The Proposed Project would comply with *2010 Clean Air Plan* goals, and would not obstruct implementation of any of these goals. As such, the Proposed Project would have less-than-significant impacts on the implementation of applicable air quality plans.

b) Air Quality Standards

This analysis focuses on construction phase emissions. Operation phase emissions are not part of the analysis because the project would not have an effect on Airport operations. Construction activities for the Proposed Project would include site preparation, grading, and placement of infrastructure. These construction activities would require the use of heavy trucks, excavating and grading equipment, material loaders, backhoes, and other construction equipment. During the construction period, the Proposed Project would also generate worker vehicle trips and hauling truck trips. These activities can cause fugitive dust emissions, as well as equipment exhaust emissions. Fugitive dust and exhaust emissions are discussed below.

Fugitive Dust. During the construction period, fugitive dust[11] emissions would be generated from ground-disturbing activities, materials handling, and mobile equipment use on unpaved surfaces. Fugitive dust emissions would contribute to particulate matter in the atmosphere. Dust could also cause watering eyes or irritation to the lungs, nose, and throat. Depending on exposure, adverse health effects can occur due to particulate matter in general, and also due to specific contaminants such as asbestos that may be in the soil, from original, natural quarry material brought to the Airport. Asbestos and other contaminants are not expected to be in the material handled at the site. However, generation of fugitive dust emissions during construction could be significant. The BAAQMD's *CEQA Air Quality Guidelines* do not include quantitative thresholds to evaluate fugitive dust emissions, and suggest implementation of BMPs to control fugitive dust emissions. The BAAQMD has identified eight construction mitigation measures, and considers these measures as meeting the BMP threshold for fugitive dust emissions. The Port would implement **Mitigation Measure AQ-1, *Fugitive Dust Control BMPs***, as indicated in the Mitigation Monitoring and Reporting Plan (MMRP) table in Appendix B. The BAAQMD fugitive dust BMPs would reduce fugitive dust impacts to a less-than-significant level. **Mitigation Measure AQ-1** addresses fugitive

[11] Fugitive dust is any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly, as a result of human activities.

dust from windblown dust, loading/unloading materials, movement of materials, and equipment movement on unpaved surfaces.

Construction Emissions. Emissions would be generated from construction-worker vehicle trips, material truck trips, and the operation of construction equipment. These are characterized as exhaust emissions. The BAAQMD CEQA *Air Quality Guidelines* provide mass emission thresholds for exhaust emissions of reactive organic gases, oxides of nitrogen, particulate matter with a diameter equal to or less than 10 microns (PM_{10}), and particulate matter with a diameter equal to or less than 2.5 microns ($PM_{2.5}$). These guidelines are used in this document to help provide substantial evidence regarding the potential impacts caused by construction activities. To compare to these mass emission thresholds, construction exhaust emissions were estimated using the CalEEMod emission model. The emission estimates combine information on construction factors, such as hours of operation and vehicle mileage, with equipment emissions data. The detailed model input and output used to run the CalEEMod model to produce the construction emissions inventory are provided in **Appendix A: Emissions Modeling Results**.

The estimated average daily construction exhaust emissions of reactive organic gases, oxides of nitrogen, PM_{10}, and $PM_{2.5}$ over the entire construction period are presented in **Table 3-1**. These emissions do not exceed the applicable BAAQMD significance thresholds, as shown in **Table 3-1**. Therefore, the Proposed Project would result in less-than-significant construction-related criteria air pollutant emissions.

Table 3-1
Project Construction Average Daily Emissions Estimates

	Estimated Average Daily Unmitigated Emissions (pounds per day)			
	ROG	**NO_X**	**PM_{10} (exhaust only)**	**$PM_{2.5}$ (exhaust only)**
Project	1.8	20.3	0.8	0.7
BAAQMD Threshold	54	54	82	54
Significant?	No	No	No	No

Notes:
BAAQMD = Bay Area Air Quality Management District
NO_X = oxides of nitrogen
PM_{10} = particulate matter with a diameter equal to or less than 10 microns
$PM_{2.5}$ = particulate matter with a diameter equal to or less than 2.5 microns
ROG = reactive organic gas

In summary, the Proposed Project would not violate any air quality standard or contribute substantially to an existing or projected exceedance of any Bay Area Air Quality Management District (BAAQMD) air quality standards, and impacts would be less than significant with mitigation.

c) Cumulative Increase in any Criteria Pollutant

The BAAQMD's *CEQA Air Quality Guidelines* state that, in developing the individual project thresholds, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively

considerable. Therefore, if a project exceeds the individual project significance threshold, its emissions would be cumulatively considerable. As shown above under **Section 3.III-b**, cumulative emissions from the Proposed Project would not exceed the BAAQMD's individual project mass emissions thresholds of significance with the implementation of **Mitigation Measure AQ-1**. Upon completion of project construction, emissions from the Proposed Project would cease. Because emissions would be temporary and below the BAAQMD thresholds, the emissions would not result in a cumulatively considerable net increase in criteria air pollutants that could impede attainment or maintenance of the ambient air quality standards. Therefore, cumulative impacts from the Proposed Project would be "less-than-significant" with mitigation.

d) Pollutant Concentrations Near Sensitive Receptors

Project-related construction activities would generate diesel particulate matter and $PM_{2.5}$ emissions associated with construction equipment such as loaders, haul trucks, and backhoes. Some receptors are considered more sensitive to air pollutants than others, owing to pre-existing health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality–related health problems than the general public.

The BAAQMD 2010 CEQA guidelines (BAAQMD, 2010a, Table 8-3) recommend assessing potential impacts to receptors within 1,000 feet of the project boundaries. There are residential areas and daycare centers to the northeast, east, and southeast of the Proposed Project, but none of them is within 1,000 feet of the project site. Based on the distance of the sensitive receptors and the temporary nature of construction activities, impacts would be less than significant.

e) Odors

Typical odor sources of concern include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing facilities, fiberglass manufacturing facilities, auto body shops, rendering plants, and coffee-roasting facilities. Diesel-fueled construction equipment associated with the Proposed Project would generate some odors associated with diesel exhaust. Because these emissions would be temporary, limited to the construction period, and would typically dissipate quickly, they would be unlikely to affect a substantial number of people. Therefore, odor impacts associated with construction of the Proposed Project would be less than significant.

Air Quality Mitigation Measure

The following mitigation measure applies to fugitive dust impacts identified in **Section 3.III-b**.

Mitigation Measure AQ-1 – Fugitive Dust Control Measures

The construction contractor shall reduce construction-related air pollutant emissions by implementing BAAQMD's basic fugitive dust control measures (BAAQMD, 2010a, Table 8-3) that will be identified in

their Dust Control submittal to the Port. Therefore, the Proposed Project shall include the following requirements in construction contracts:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved vehicle service roads) shall be watered as necessary with recycled water.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered with a tarp to prevent discharge of this material to roadways.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- A publically visible sign shall be posted with the telephone number the Port Resident Engineer to contact regarding dust complaints. This person shall respond and take all corrective actions necessary within 48 hours to prevent fugitive dust emissions. The Air District's telephone number shall also be visible to ensure compliance with applicable regulations.
- Idling times of construction equipment shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, California Code of Regulations Section 2485). The contractor will be required to submit an air pollution control plan prior to the start of construction activities. Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All diesel-powered off-road construction vehicles and diesel powered equipment used on the project must be registered in CARB's Diesel Off-Road On-Line Reporting System (DOORS), and have appropriate placards on trucks showing compliance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Regulatory Setting

Applicable federal, state, and local regulations specific to biological resources are described below.

The Federal Endangered Species Act (FESA)

FESA establishes protection and conservation of threatened and endangered species, and the habitat on which they depend. The USFWS and NMFS administer FESA. Section 7 of FESA governs interagency cooperation and consultation to ensure that activities do not jeopardize the existence of threatened or endangered species, or result in adverse modification or destruction of their critical habitat.

The Magnuson-Stevens Act

The purpose of the Magnuson-Stevens Fishery Conservation and Management Act of 1976 is to stop overfishing by foreign fleets, and aid in the development of the U.S. domestic fishing industry. The United States has sole management authority over all living resources within the 200-nautical-mile exclusive

economic zone of the United States. The 1996 amendments, termed the Sustainable Fisheries Act of 1996 (SFA), designate and conserve Essential Fish Habitat (EFH) for species managed under a Fisheries Management Plan. The SFA was enacted to minimize any adverse effects on habitat caused by fishing or non-fishing activities, and to identify other actions to encourage the conservation and enhancement of such habitat. EFH is defined as "those waters and substrate necessary for spawning, breeding, feeding, or growth to maturity."

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] Sections 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668) protect certain species of birds from direct "take." The MBTA protects migratory bird species from take by setting hunting limits and seasons and protecting occupied nests and eggs. The Bald and Golden Eagle Protection Act (16 USC Sections 668-668d) prohibits the take or commerce of any part of Bald and Golden Eagles. The USFWS administers both acts, and reviews federal agency actions that may affect species protected by the acts.

Clean Water Act – Section 404

Wetlands and other waters of the U.S. are under the jurisdiction of the USACE and U.S. Environmental Protection Agency (U.S. EPA) under Section 404 of the CWA (33 USC 1251 et seq., 1972). The USACE issues permits based on guidelines established under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899. Section 404 of the CWA prohibits the discharge of dredged or fill material into "waters of the United States," including wetlands, without a permit from USACE. U.S. EPA also has authority over wetlands and may under Section 404(c) veto a USACE permit.

General permits are handled through a Nationwide Permit (NWP) process. These permits allow specific activities that generally create minimal environmental effects. Projects that qualify under the NWP program must fulfill several general and specific conditions under each applicable NWP. If a proposed project cannot meet the conditions of each applicable NWP, an individual permit would likely be required from the USACE.

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) administers the California Endangered Species Act of 1984 (CESA) (California Fish and Game Code [CFGC] Section 2080 et seq.), which regulates the listing and "take" of endangered and threatened state-listed species. "Take" is defined by CESA as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." State-listed species (CFGC Section 86). CDFW administers CESA and authorizes take through permits or memorandums of understanding issued under Section 2081 of CFGC, or through a consistency determination issued under Section 2080.1. Under State laws, CDFW is empowered to review projects for their potential impacts to State-listed species and their habitats.

CDFW maintains lists for Candidate-Endangered Species and Candidate-Threatened Species. California candidate species are afforded the same level of protection as State-listed species.

California also designates Species of Special Concern, which are species of limited distribution; declining populations; diminishing habitat; or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future and are analyzed as sensitive species under CEQA.

All state lead agencies must consult with CDFW under CESA when a proposed project may affect state-listed species. CDFW would determine if a project under review would jeopardize or result in taking of a state-listed species, or destroy or adversely modify its essential habitat (also known as a "jeopardy finding") (CFGC Section 2090). For projects where CDFW has made a jeopardy finding, CDFW must specify reasonable and prudent alternatives to the proposed project to the state lead agency (CFGC Section 2090 et seq.).

California Fish and Game Code Section 3503

CFGC Section 3503.5 protects birds of prey, their nests, and eggs against take, possession, or destruction; while Section 3503 protects California's native birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.

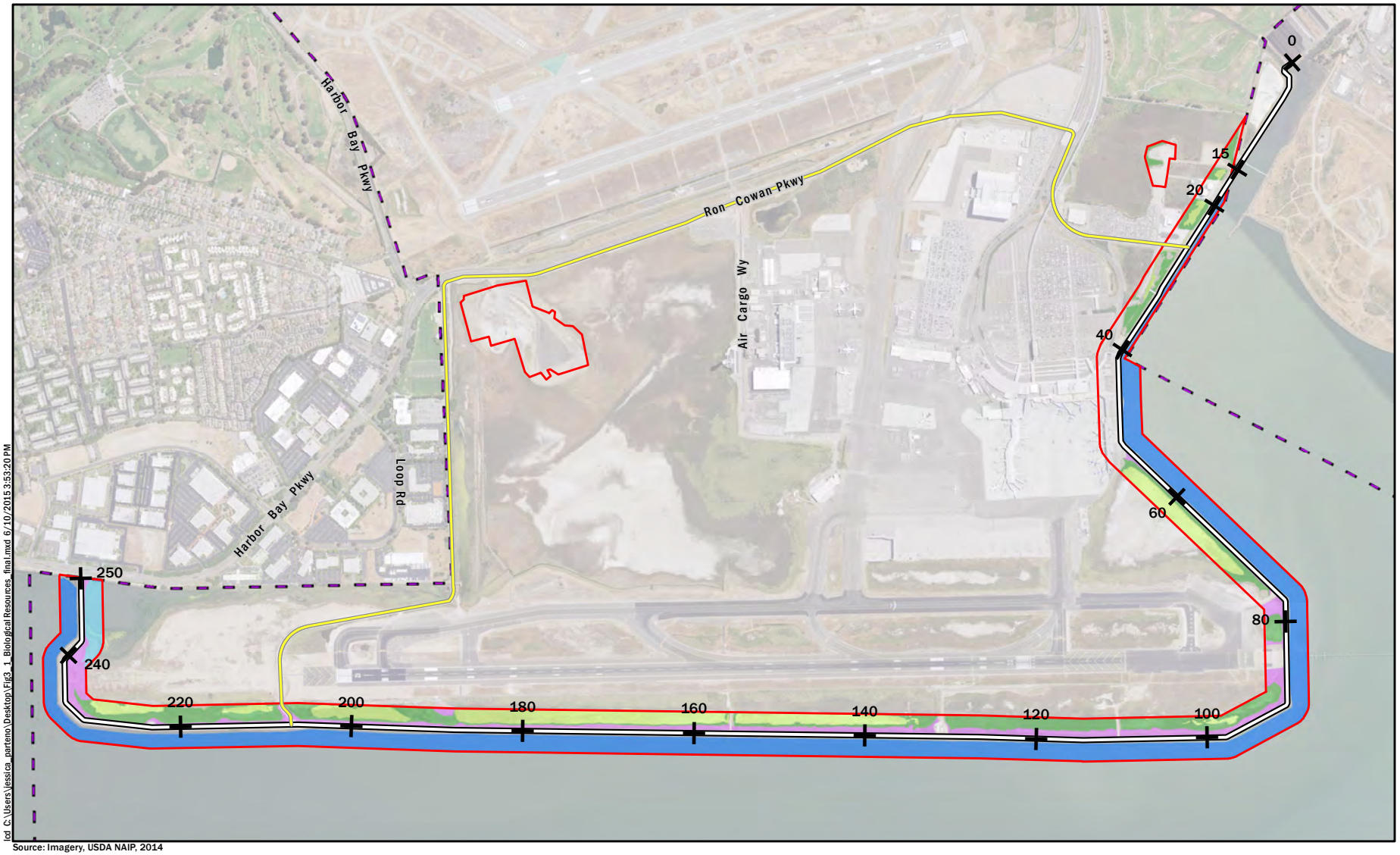
Existing Conditions

For the purposes of evaluating biological resources at the Proposed Project site, a study area was established that encompasses anticipated potential direct and indirect effects to candidate, sensitive, or special-status species; sensitive natural communities; or federally protected wetlands (collectively referred to as Biological Resources). The Biological Resources study area (study area) is shown on **Figure 3-1**. For analysis purposes, "special-status species" include species with the potential to occur that are managed or protected under the following:

- Plants and animals that are listed or proposed for listing as threatened or endangered under CESA and/or FESA;
- Plants and animals that meet the definition of rare or endangered under CEQA (14 California Code of Regulations Section 15380), but are not listed under CESA or FESA;
- Plants appearing on List 1A and List 1B of the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California;
- Plants and animals that are designated by CDFW as Species of Special Concern;
- Animals that are designated as fully protected under CFGC;
- Bird species protected under the Migratory Bird Treaty Act;
- Bird species protected under the Bald and Golden Eagle Protection Act; and

The following sources of information were used to evaluate potential effects to Biological Resources in the study area:

- **Database Searches:** Information on special-status species that may occur in the vicinity of the Airport were acquired through the USFWS Sacramento Field Office (USFWS, 2014), a letter from the NMFS (NMFS, 2010), CDFW's California Natural Diversity Database (CDFW, 2013), and the CNPS Inventory of Rare and Endangered Plants (CNPS, 2014)



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Source: Imagery, USDA NAIP, 2014

- Perimeter Dike Alignment
- Access Route
- Biological Study Area
- Airport Boundary

Habitat

- Uplands
- Non-Tidal Wetlands
- Non-Tidal Waters of the U.S.
- Muted Tidal Wetlands and Waters of the U.S.
- Open Water

0 1,000 2,000 FEET

BIOLOGICAL STUDY AREA AND WETLAND AND UPLAND HABITATS

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 3-1

- **Species and Habitat Surveys:** Focused surveys have been conducted in various years in the Proposed Project study area for California clapper rail (*Rallus longirostris obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), wetland habitat suitability, and rare plants. Survey results are summarized in the Runway Safety Area (RSA) Improvement Project Biological Assessment (URS, 2012a), and in memoranda from URS to the Port (URS, 2012b and 2015).

Land Cover Within the Study Area

OAK consists of a highly urbanized area interspersed with natural areas (mostly wetlands) that is surrounded by the cities of Alameda, Oakland, and San Leandro.

Based on reconnaissance surveys and aerial photograph interpretation, land cover types in the study area were mapped and digitized in a Geographical Information System. Special-status species habitats identified in the Proposed Project study area include muted-tidal and non-tidal wetlands, open water, and uplands. Other non-habitat land cover types include riprap and the dike roadway. **Figure 3-1** shows the general location of each type of land cover in the study area.

Muted-Tidal Wetlands

Muted-tidal wetlands (coastal wetlands where the tide is restricted) are present in a small portion of the northern reach of the study area, along the perimeter of the muted tidal lagoon at the northwestern end of Runway 12/30, just south of Harbor Bay Parkway (approximately Station 242 of the perimeter dike). At the muted tidal lagoon, the tidal flow comes from two culverts, and runs under the perimeter dike vehicle service road, which effectively slows or "mutes" the tidal flow both into and out of the lagoon. Vegetation in this location is consistent with that found in a typical tidal wetland, such as pickleweed (*Salicornia* sp.), saltgrass (*Distichilis spicata*), saltbush (*Atriplex* sp.), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), rabbit's-foot grass (*Polypogon monspeliensis*), sheep sorrel (*Rumex acetosella*), and curly dock (*Rumex crispus*).

Non-Tidal Wetlands

The majority of the wetlands in the study area have a seasonal hydrology that is associated with runoff from both the South Field and the North Field during the rainy season. Topographic depressions in the study area along the western side of Runway 12 in the South Field near the muted tidal lagoon distinguish the vegetation composition and duration of ponding from other non-tidal wetlands at the eastern end of Runway 30 in the South Field. The non-tidal wetlands are dominated by pickleweed and saltgrass, with small patches of invasive and native cordgrass (*Spartina* sp.).

Near Runway 12, the non-tidal wetland features surround discrete shallow depressions that contain brackish water through most of the year. These wetland features artificially resemble marsh pannes in both hydrology and vegetative cover. The water level is generally shallow yet persistent throughout the year, and contains sufficiently brackish water, which favors the presence of native tidal marsh vegetation around the margins. Based on the vegetation composition and persistence of standing water, the non-tidal wetland habitat at these locations may provide marginal foraging opportunities for dispersing juvenile Ridgway's rails (Formerly California Clapper Rails) (*Rallus obsoletus obsoletus*). Portions of the non-tidal wetlands also provide potentially suitable habitat for salt marsh harvest mouse, though this species is

presumed absent from the study area (see page 3-21 for additional detail regarding the salt marsh harvest mouse). Other species with the potential to occur in portions of the non-tidal and muted tidal wetland habitat include California black rail (*Laterallus jamaicensis coturniculus*).

Wetland features in OAK were field-verified by the USACE on October 28, 2009; the jurisdictional delineation was subsequently approved on March 15, 2011 (USACE, 2011). The current jurisdictional delineation for the Airport is valid for 5 years from the date of approval.

Other Waters of the United States

Open water found on the outboard and tidal lagoon portions of the study area is of variable elevation due to tidal influence. Open water habitat presumed to be occupied by numerous special-status fish species such as green sturgeon (*Acipenser medirostris*), Central California Coast steelhead (*Oncorhynchus mykiss irideus*), and longfin smelt is restricted to tidally influenced sections of the study area and does not include non-tidal wetlands. Because the actual amount of open water habitat capable of supporting special-status fish species is restricted to discrete locations along the outboard slope of the perimeter dike and tidal lagoon, and because work activities would occur during low tide to the extent feasible, it is anticipated that open or standing water will be absent from the study area during construction activities.

Uplands

The upland habitat in the study area is primarily composed of non-native annual grassland, monotypic stands of pampas grass (*Cortaderia jubata*), large patches of invasive iceplant (*Carpobrotus* sp.), and small stands of coyote bush (*Baccharis pilularis*). Other common annual species in the study area include mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativus*), filaree (*Erodium botrys*), bird's foot trefoil (*Lotus corniculatus*), plantain (*Plantago sp.*), Mediterranean barley (*Hordeum hystrix*), common wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium multiflorum*), foxtail (*Hordeum leporinum*), Queen Anne's lace (*Daucus carota*), sweet clover (*Melilotus alba*), bristly ox-tongue (*Picris echioides*), and purple thistle (*Cirsium vulgare*). Areas of bare ground or sparse vegetation cover are present in small areas in the study area, primarily adjacent to the runways. These areas may be present as an extension of developed areas, such as the runways, taxiways, and/or access roads.

Riprap

Riprap covers an extensive portion of the outboard side of the perimeter dike. Riprap consists of rock and/or concrete rubble placed on the outboard dike slope to protect it from erosion. Most of the perimeter dike is covered in riprap and is devoid of vegetation. Iceplant can be found growing to a limited degree at the upper extent of the riprap. Sparse stands of salt tolerant plant species grow opportunistically just above the mean high tide line throughout the riprap portion of the dike. Small patches of tidal marsh vegetation primarily consisting of pickleweed, saltgrass, and marsh daisy (*Jaumea carnosa*) occur in a single location where there has been significant loss of riprap material. The vegetation at this site superficially resembles that of tidal marsh; however, cumulative patch size is extremely small

(0.025 acre), vegetative growth is sparse and patchy, inundation and wave-action are severe, and growing conditions are marginal. Overall, riprap is of limited value to wildlife and plants.

Special-Status Species with Potential to Occur within the Study Area

An inventory of special-status species and designated and proposed critical habitats known or potentially occurring in the vicinity of the Airport was created based on existing federal, state, and resource agency information (USFWS, 2014; CDFW, 2013; CNPS, 2014). At a minimum, all searches used the Hunters Point (448A), Oakland East (466B), Oakland West (465C), and San Leandro (447B) United States Geological Survey 7.5-minute quadrangles. For each of the special-status plant and wildlife species returned from the quad review, habitat requirements were assessed, and compared to habitats present in the study area. Factors such as onsite habitat quality and known geographic distribution of the species were considered in evaluating the likelihood of species occurrence in the study area. Only those species for which suitable habitat overlapped with the current known range were evaluated for their potential to occur. These species are reviewed below.

Special-Status Plant Species

Rare plant and floristic surveys were conducted by botanists from Environmental Science Associates in October 1991, and during September, October, and November 1992; and by botanists from H.T. Harvey and Associates in July and August 1992 and in January 1993. URS biologists conducted additional special-status plant surveys in the vicinity of the study area on April 23 and May 30, 2012 (URS, 2013). These surveys were carried out to coincide with the normal flowering periods of the rare plant species reported at that time. Habitats and conditions that were present in the 1991 and 1992 floristic surveys are similar to those currently found at OAK, as verified during site reconnaissance surveys on May 6, 2009; February 4 and 11, 2011; May 11, 2011; and January 5, 2012, in support of the RSA improvement project (URS, 2012a), and during the two special-status plant surveys in 2012 (URS, 2013).

No individuals or populations of special-status plant species were observed within or in the vicinity of the study area during any of the surveys from 1991 to 2015. In addition, there are no other federally listed or state-listed plant species with the potential to occur in the study area.

Special-Status Wildlife and Fish Species

Based on the results of background research and analysis, the following 10 special-status wildlife and fish species have the potential to occur in the vicinity of the study area, as summarized in **Table 3-2**.

Habitat requirements for the special-status wildlife species identified above were compared to existing habitat present in the study area. The likelihood of any of these species occurring in the study area was evaluated based on observations made during reconnaissance site visits, existing biological reports, individual species' geographic distribution, onsite habitat quality, and connectivity to existing populations. Below is a summary of their potential to occur in the study area.

Table 3-2
Special-Status Wildlife and Fish Species With Potential to Occur Within the Study Area

Common Name/Name	Federal or State Status	Likelihood of Occurrence
Mammals		
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE, FP	Low
Birds		
Ridgway's rail (*Rallus obsoletus obsoletus*)	FE, MBTA, SE, FP	Low
Northern harrier (*Circus cyaneus*)	MBTA, SSC	Low
White-tailed kite (*Elanus leucurus*)	MBTA, FP	Low
Saltmarsh common yellowthroat (*Geothylypis trichas sinuosa*)	MBTA, SSC	Low
California black rail (*Laterallus jamaicensis coturniculus*)	MBTA, ST, FP	Low
Alameda song sparrow (*Melospiza melodia pusillula*)	MBTA, SSC	Low
Fish		
Green Sturgeon (*Acipenser medirostris*)	FT	Medium (open water)
Central California Coast steelhead (*Oncorhynchus mykiss irideus*)	FT	Medium (open water)
Longfin smelt (*Spirinchus thaleichthys*)	ST	Medium (open water)

Notes:

Federal Status

FE Endangered. Species in danger of extinction throughout all or a significant portion of its range.
FT Threatened. Species likely to become endangered in the foreseeable future.
MBTA Species protected under the Migratory Bird Treaty Act.

California State Status

FP Fully protected species defined in the State of California under Sections 3511 of CFGC.
SE Endangered. Species whose continued existence in California is in jeopardy.
ST Threatened. Species likely to become endangered in the foreseeable future.
SSC California Department of Fish and Game species of special concern.

Special-Status Mammal Species

Suitable habitat for salt marsh harvest mouse is marginal in the study area. The potential for this species to occur is considered very low, based on the following factors: 1) all of the documented occurrences of salt marsh harvest mouse in the region are outside of the Airport boundary; 2) there are no records of this species in the study area or within the Airport boundary; and 3) ongoing, multi-year intensive trapping efforts, conducted in potential habitat within the OAK boundary between 1985 and 2001, did not detect any salt marsh harvest mice (URS, 2012a). Critical habitat has not been designated for salt marsh harvest mouse.

Special-Status Bird Species

Ridgway's rail has low to marginal potential to occur in non-tidal wetlands in the study area. Due to the proximity of known Ridgway's rail breeding habitat within San Leandro Bay (approximately 2 miles from the study area), it is anticipated that dispersing Ridgway's rail could potentially land in the non-tidal wetlands of the Airport. However, this habitat would provide only marginal foraging opportunity, and would not be used for breeding by the rails. Migratory juvenile Ridgway's rails typically disperse during the fall and winter, when they become vulnerable to spring tide events and predators. Overall, Ridgway's rail has very low potential to occur in the study area. Critical habitat has not been designated for Ridgway's rail.

In addition to Ridgway's rail, other bird species with the potential to occur in the vicinity of the study area include the northern harrier, white-tailed kite, salt-marsh common yellowthroat, California black rail, and Alameda song sparrow. The protection status and likelihood of occurrence of these species is provided in **Table 3-2**. It is presumed that the raptor species are intermittent visitors to portions of the study area, and may forage in wetland and upland habitats. Neither white-tailed kite nor northern harrier is documented to have nested in the study area, or in other, more suitable habitats in the South Field. Alameda song sparrows are ubiquitous along the San Francisco shoreline, and can occupy a wide range of habitats. Given the nature of the Proposed Project activities and the mobility of these species, it is anticipated that the sparrows would actively avoid construction activity. California black rail has never been detected at the Airport, but suitable habitat dominated by pickleweed is present in the study area. Salt-marsh common yellowthroat habitat occurs in other portions of the OAK South Field (such as those areas with thick stands of emergent brackish vegetation); however this habitat type is essentially absent from the study area. Overall, for all of these species, the likelihood of occurrence in the study area is low.

Special-Status Fish Species

Three special-status fish species were identified as having medium potential to occur in the open-water habitat portion of the study area: the southern distinct population segment of green sturgeon, the Central California Coast steelhead evolutionary significant unit, and longfin smelt (**Table 3-2**). These special-status fish species occupy San Francisco Bay for either part or all of their lifecycle, and could potentially occur in the open-water habitat portion of the study area. Although these areas were included as part of the comprehensive study area for the biological analysis, the Proposed Project construction activities are not anticipated to take place in open-water habitat.

Essential Fish Habitat. San Francisco Bay, including open-water habitat in the study area, is classified as Essential Fish Habitat under the Magnusson-Stevens Act. Commercially important fish and sharks that are federally managed under the following three fisheries management plans (FMPs): Coastal Pelagic FMP (PFMC, 2011), Pacific Groundfish FMP (PFMC, 2014), and Pacific Coast Salmon FMP (PFMC, 1997)

Effects to Special-Status Species and Habitats

The Proposed Project would result in both temporary and permanent effects to biological resources, particularly upland and wetland habitats that are directly adjacent to the perimeter dike. Effects to riprap are not considered here due to the negligible habitat value of this feature. Implementation of project-related activities such as raising the dike crest with fill, placing riprap in deficient areas, excavating and backfilling portions of the existing dike with soil-cement mix, clearing/grubbing topsoil for placement of a

temporary work platform, and installing stability berms and shear panels may result in temporary and permanent effects to wetlands that historically supported special-status wildlife species. Access routes are limited to existing roads, and staging areas would be located in previously disturbed areas (see **Figure 2-9** and **Section 2.5.3**).

The construction BMPs listed in **Section 2.6** of this document—in addition to species-specific mitigation measures identified below—would be implemented to avoid and minimize the potential for effects associated with suitable habitats that may support wildlife and plant resources, including special-status species.

a) Effects to Special-Status Species

As described further below, the Proposed Project may temporarily disturb potentially suitable habitat for special-status wildlife species. All land cover types in the study area are shown on **Figure 3-1**. Potential effects to each of the special-status species are discussed in the following sections.

Special-Status Plant Species

Through research and background review of all the plant species with the potential to occur in the vicinity of the study area, it was determined there are no federal or state listed plants with the potential to occur in the study area. Given the existing conditions of the disturbed areas in the study area, it is unlikely that it would provide suitable habitat for special-status plant species. Special-status plant species are not anticipated to occur, because the areas have been previously graded and are regularly disturbed. In addition, no special-status plant species have been previously observed in the areas to be disturbed by the Proposed Project. Focused floristic surveys in the study area as recently as May 2012 have not detected any special-status plants. For these reasons, no impact to special-status plants is anticipated from the Proposed Project.

Special-Status Wildlife Species

This section addresses potential effects to the special-status wildlife species with the potential to occur in the study area (identified in **Table 3-2**).

Salt Marsh Harvest Mouse

Potential habitat for this species is present at the Airport, including the study area. The Proposed Project could impact this habitat by removing vegetation. The Proposed Project would permanently remove and temporarily disturb non-tidal and muted-tidal wetlands that are potentially suitable for the salt marsh harvest mouse. However, occurrence of the salt marsh harvest mouse in the study area is extremely unlikely, and it is probable that this species does not occur at OAK. In the unlikely event that an individual occurs on site during construction activities, this would be a potentially significant impact. The Port would implement the BMPs described under **Section 2.6** of this document, which would reduce potential effects to the salt marsh harvest mouse. In addition, to further reduce the potential significant effects to the salt marsh harvest mouse, the Port would implement habitat-specific **Mitigation Measure BO-1, *Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat***, described below. This measure would require that a qualified biologist monitor all construction work that occurs in salt marsh harvest

mouse habitat, to avoid effects to salt marsh harvest mouse, and to minimize habitat disturbance. With implementation of these mitigation measures, potential effects to the salt marsh harvest mouse would be reduced to less-than-significant levels.

Ridgway's Rail

The Proposed Project could affect this species by removing vegetation and disturbing its potential marginal habitat in the study area. The Proposed Project would permanently remove and temporarily disturb non-tidal and muted-tidal wetlands that are marginally suitable for the Ridgway's rail. However, based on predation pressure and the absence of suitable breeding habitat, Ridgway's rail nesting is not likely to occur in the study area. Juvenile migrants have a very low potential to occur in the study area when dispersing from nearby regional populations in the San Leandro Bay wetland complex. Use of the study area by juvenile or adult rails is extremely rare throughout the year, with the potential for sporadic individuals to be present increasing slightly during the post-breeding dispersal period. Habitat assessments at OAK in 2011 and 2012 found only one wetland suitable for the species, in Fan Marsh in the North Field, which is far outside the study area and would not be affected by any project activities (URS, 2012b). Focused surveys in the study area have not detected the species, and there remains a very low potential for occurrence in the study area. In the unlikely event that dispersing individual Ridgway's Rails occur on site during construction activities, this would be a potentially significant impact. The Port would implement the BMPs described in this document under **Section 2.6**, which would reduce potential effects to the Ridgway's rail. In addition, to further reduce the potential effects to the species, the Port would implement **Mitigation Measure BO-2, *Environmental Awareness Training***, and **Mitigation Measure BO-3, *Conduct Pre-Construction Surveys.*** These measures require that the construction crew be trained to be aware of the habitat and recognize the species, and that a non-protocol level pre-construction survey for the species be conducted. With implementation of these mitigation measures, potential effects to the Ridgeway's rail would be reduced to less-than-significant levels.

California Black Rail

Potential habitat for this species is present at the Airport and in the study area, and the Proposed Project could affect this species by removing vegetation and disturbing potential habitat. However, the occurrence of the California black rail in the study area is extremely unlikely, and it is probable that this species does occur at OAK only sporadically and inconsistently due to the low quality of non-tidal and muted-tidal wetland habitat. In the unlikely event that an individual occurs on site during construction activities, this would be a potentially significant impact. The Port would implement the BMPs in this document described under **Section 2.6,** which would reduce potential effects to the California black rail. In addition, to further reduce the potential significant effects to the California black rail, the Port would implement habitat-specific **Mitigation BO-1,** described below. These measures require pre-construction surveys and biological monitoring of all construction work that occurs in salt marsh habitat suitable for the California black rail, which is strongly associated with dense pickleweed stands. With implementation of these mitigation measures, potential effects to the California black rail would be reduced to less-than-significant levels.

Other Special-Status Wildlife Species

Other special-status species that have the potential to be affected by wetland or upland habitat loss include the northern harrier, white-tailed kite, salt marsh common yellowthroat, and Alameda song sparrow. None of these species has been documented breeding at the Airport, but it is possible that they are at least seasonally present in wetlands or uplands on site. Potential effects to these special-status wildlife species may occur due to loss of wetland and/or upland habitats, which these species may be actively using for foraging, breeding, roosting, or other activities. Construction activities during the nesting season may also result in significant impacts to these species if they are nesting in or near the study area. Implementation of **Mitigation Measure BO-3** would help identify whether any of these species occur on site at the time of project construction so they can be avoided, and would therefore reduce effects to less-than-significant levels.

Summary for Special-Status Plant and Wildlife Species

In summary, during project construction, implementation of **Mitigation Measures BO-1** through **BO-3** would reduce potentially significant effects to special-status plant and wildlife species with the potential to occur in the study area to less-than-significant levels. Therefore, project-related effects on special-status plant and wildlife species and their habitats during construction activities would be less-than-significant with mitigation.

Special-Status Fish Species

During the course of staging and stockpiling processes, no expected disturbance to aquatic habitat and special-status fish species would occur. The construction activities, including installation of stability berms and shear panels, basic improvements to raise crest structure, armoring the top and back sides of the levees, and placement of stone columns and soil cements, would occur at least 20 to 45 feet away from the waters of San Francisco Bay. Although work activities should largely avoid open water habitats, repair of the riprap armor on the outboard side of the perimeter dike may result in minor effects to this habitat, including accidental discharge of riprap or sound transmission into the water column due to on-land activities. Placement of riprap in deficient areas of the perimeter dike would occur during low tide, to the extent feasible, when water is not present. Background disturbances from construction activities in the project area are considered small in scale compared to naturally occurring physical events such as wave action and storm events. In some of the non-tidal wetland areas, it may be necessary to pump down the water level to accommodate construction activities. Standing water in these wetland features is separated from San Francisco Bay by the perimeter dike, and is typically the result of seepage and run-off from the runway and associated taxiways. Fish have never been observed in these isolated areas. Accordingly, construction-related pumping in these isolated areas should not result in any inadvertent impacts to special-status fish species. The effects of the construction activities would be less than significant.

The Fisheries Hydroacoustic Working Group—whose members include the NMFS Southwest and Northwest Divisions, California, Washington, and Oregon departments of transportation, CDFW, and the U.S. Federal Highway Administration—has established threshold criteria to determine the effects of high-intensity sound on fish (FHWG, 2012). These criteria were established after extensive review of the most

recent analysis of the effects of underwater noise on fish. The agreed-upon threshold criteria for impulse-type noise to harm fish have been set at 206 decibels (dB) peak; 187 dB accumulated sound exposure level for fish over 2 grams; and 183 dB for fish less than 2 grams.

For the Proposed Project, no significant sources of underwater noise would occur during installation of columns along the perimeter dike alignment, which would be approximately 25 to 40 feet away from the high-tide line, or during deep-soil mixing. As discussed in **Section XII-a**, construction-related noise effects would not exceed 80 dB within the water column due to the very low sound and vibration levels of the proposed activities. Potential adverse effects to fish due to sound and vibration would be less than significant.

Soil-cement blocks, seepage cutoff, or drainage systems would be installed to control seepage throughout the dike. Additionally, construction stormwater runoff would be minimized during construction in compliance with the SWPPP, including construction BMPs. Seepage and runoff control measures would prevent any interference with the movement of migrating salmon that may use the vicinity of the project site as a migratory corridor. For these reasons, the project impact to fish species would be less than significant.

The operational activities related to the Proposed Project were reviewed for potential effects to vegetation, wildlife, fish, and special-status species. Because there are no operational changes to OAK, no adverse effects to vegetation, wildlife, or special-status species would occur as a result of ongoing operation of the Proposed Project. Therefore, there would be no effects to special-status species or their habitats from Airport operations associated with the Proposed Project.

b) Effects to Riparian or other Sensitive Natural Communities

Habitats in the study area include wetlands, upland habitat, and open bay, as depicted on **Figure 3-1**. For the purposes of this analysis, sensitive natural communities include riparian habitats and natural communities identified as sensitive in the California Natural Diversity Database (CDFW, 2013). Sensitive natural communities in the study area are restricted to muted tidal and non-tidal pickleweed and saltgrass dominated wetlands. Project activities would result in loss of up to 5.26 acres of these habitats. Riparian habitat and other sensitive natural communities are otherwise absent from the study area. As described in greater detail below, to reduce the potentially significant effects to wetland habitats, the Port would implement **Mitigation Measure BO-4, *Offsite Mitigation for Wetlands and Other Waters.*** With implementation of this mitigation, potential effects to tidal marsh would be reduced to less-than-significant levels.

c) Effects to Wetlands and other Waters

Any activity that fills, destroys, degrades the water quality, or disturbs the natural hydrology of a wetland or other water of the U.S. and the state would be a potentially significant impact. Wetlands and waters of the U.S. and the state may provide habitat for a variety of special-status species. Wetlands subject to USACE jurisdiction at OAK are classified into Tidal Wetlands, Non-Tidal Wetlands, Tidal Other Waters, and Non-Tidal Other Waters (USACE, 2011). Wetlands are classified based on plant species composition, hydrologic regime, tidal influence, and geomorphology. The Study Area contains all four

wetlands types. Up to 5.26 acres of jurisdictional wetlands and other waters would be impacted by the proposed improvements (such as grading or fill required for flood protection, construction of temporary working bench, and seismic upgrades to the perimeter dike).

The estimated total environmental impact on the inboard side of the dike is 5.26 acres, which includes 4.90 acres of non-tidal wetlands and 0.36 acres of non-tidal other waters of the U.S. Impacts to non-tidal wetlands include 3.32 acres of temporary impacts and 1.58 acres of permanent impacts. Impacts to non-tidal other waters of the U.S. include 0.20 acre of temporary impacts and 0.16 acre of permanent impacts. The Proposed Project would not impact tidal wetlands or tidal other waters of the U.S. on the inboard side of the dike.

As noted under Section 2.5, Construction Best Management Practices, the Port would implement specific BMPs to minimize effects to jurisdictional wetlands and other waters. These would include field marking of the non-tidal wetlands and waters of the U.S. However, the Proposed Project could result in significant effects to jurisdictional wetlands and other waters. To reduce these effects, the Port would implement **Mitigation Measure BO-4,** to ensure no net loss of wetlands through the acquisition of offsite compensatory mitigation for unavoidable effects to jurisdictional wetlands, as reviewed and approved by the USACE and the RWQCB.

In addition, the project sponsor would work with the USACE and the RWQCB to obtain a Section 404 permit for discharges to waters of the U.S., and a corresponding Section 401 Water Quality Certification/ Waste Discharge Requirements from the RWQCB. Through these processes, the agencies would ensure that the Proposed Project is the Least Environmentally Damaging Practicable Alternative to impacting wetlands and waters of the U.S., and would assist in finalizing the most appropriate mitigation option for wetlands.

Thus, effects to jurisdictional wetlands and other waters would be less than significant with mitigation.

d) Interference with Wildlife or Fisheries Migratory Corridors

No interference with wildlife or fisheries migratory corridors is anticipated due to implementation of the Proposed Project. The Proposed Project would not result in a substantial change to any existing wildlife or fisheries migratory corridors that occur in the vicinity, such as open bay on the outboard side, or non-tidal marsh habitat on the inboard side of the perimeter dike. The vast majority of work would be conducted on the perimeter dike itself, which would not interfere with wildlife or fisheries migratory corridors. Therefore, the Proposed Project would have a less-than-significant effect on the movement of migratory wildlife or fish species.

e) Conflicts with Local Policies

The Proposed Project does not include the removal of trees. Therefore, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and there would be no impact to these resources.

f) Conflicts with Adopted Habitat Conservation Plan or Natural Community Conservation Plan

There is no proposed or adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan that encompasses the study area at the Airport. Therefore, the Proposed Project would not conflict with any such plan, and there would be no impact.

Biological Resources Mitigation Measures

The following mitigation measures apply to effects identified in **Sections 3.IV-a**, **b**, and **c**. These measures would avoid and/or minimize the potential for effects to wildlife and plant resources and habitat, including federal- and state-listed special-status species. Implementation of these mitigation measures may be refined during coordination and consultation with the applicable resource agencies.

Mitigation Measure BO-1 – Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat

A qualified biologist shall monitor all construction activities in suitable salt marsh habitat within the project site. A qualified biologist will look for any listed species (i.e., salt marsh harvest mouse, California black rail, and Ridgeway's rail) during all construction activities in suitable habitat. If any listed species is encountered during project construction, all work that could result in direct injury, disturbance, or harassment of the individual animal shall immediately cease, and the foreman and qualified biologist shall be immediately notified. The qualified biologist shall monitor the location until he/she determines that the animal(s) are not imperiled by predators or other dangers. The qualified biologist shall notify the USFWS following any personal encounters with a listed species during construction within 1 working day via email or telephone.

Mitigation Measure BO-2 – Environmental Awareness Training

A qualified biologist shall conduct environmental awareness training for all construction crews and contractors working in special-status species habitats (e.g., non-tidal wetlands and muted tidal wetlands) before initiating work on the Proposed Project. The training shall include a brief review of all the special-status species and other sensitive resources that may exist in the study area, including the field identification and the habitat requirements of each species; the locations of sensitive biological resources; the legal status and protection of each species; the Proposed Project's avoidance and minimization measures; environmental permits; and regulatory compliance requirements.

New workers who arrive after the start of construction shall be trained as needed by a designated onsite supervisor. Additional training shall be conducted as needed, including morning "tailgate" sessions, to update crews as the work progresses. A record of all personnel trained during the Proposed Project shall be maintained, and this record shall be made available for compliance verification. In addition, training materials, written documentation, photographs, and/or interpretive signs shall be provided to the work

crew by the Port's contractor with details on sensitive resources, resource avoidance, permit conditions, and possible fines for violations of state or federal environmental laws.

Mitigation Measure BO-3 – Conduct Pre-Construction Surveys

A pre-construction survey for any protected species shall be conducted 30 days prior to the start of construction activities. In the unlikely event that a protected species is in the study area, the Port shall implement measures (such as implementing a construction buffer around the area, having a qualified biologist onsite, or waiting for the species to passively leave the area) to avoid impacts.

Mitigation Measure BO-4 – Offsite Mitigation for Wetlands and Other Waters

The Proposed Project would result in the loss of up to 5.26 acres of jurisdictional wetlands and other waters of the U.S. (**Figure 3-1**). Any compensatory mitigation would need to be provided offsite, because placing mitigation areas onsite at OAK to compensate for wetland effects would be inconsistent with the following federal regulations and guidelines:

- Memorandum of Agreement between the FAA, the United States Air Force, the United States Army, the U.S. EPA, the USFWS, and the United States Department of Agriculture to Address Aircraft-Wildlife Strikes (2003), which established procedures to address existing and future environmental conditions contributing to aircraft-wildlife strikes.

- FAA Advisory Circular 150/5200 33B, Hazardous Wildlife Attractants on or Near Airports, which recommends a minimum separation distance of 10,000 feet between aircraft operations areas of airports serving turbine jet aircraft, and hazardous wildlife attractants; and recommends a distance of 5 statute miles between the airport operations area and hazardous wildlife attractants, if the attractant could cause hazardous wildlife movement into or across the airport's approach or departure airspace.

- FAA regulations (14 CFR 139.337) regarding certification of commercial service airports, which require that OAK, as a commercial service airport, alleviate wildlife-aircraft collision strike hazards.

- USACE regulations (33 CFR Part 332.3[b][1]) regarding compensatory mitigation for losses of aquatic resources, which state that compensatory mitigation projects should not be located where they will increase risks to aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur.

The selected offsite mitigation will provide benefits to sensitive non-tidal and muted tidal wetlands above and beyond the value provided at OAK. Specific benefits would include providing contiguous habitat with functional linkages to existing populations that would be preserved in perpetuity and managed for the benefit of species.

The U.S. EPA and USACE's Wetlands Mitigation Rule (Mitigation Rule) requires replacement of the loss of wetland acreage and functions from fill of wetlands through compensatory mitigation, but does not allow compensatory mitigation in locations that may create a wildlife-aircraft strike hazard (USACE, 2008). The Port has identified the following proposed offsite compensatory mitigation to ensure that there is no net loss of wetland habitat, which would reduce impacts to a less-than-significant level. This mitigation

package will be reviewed and further refined by the regulating resource agencies; in particular, USACE and the RWQCB, as part of the respective Section 404 and 401 permitting processes under the CWA.

Requirements for Mitigation for Loss to Aquatic Resources. The CWA prohibits the discharge of dredged or fill material into wetlands, streams, and waters of the U.S., unless a Section 404 permit is issued by the USACE, and a Section 401 Water Quality Certification is issued from the state in which the discharge originates (33 USC 1344). Implementation of the Proposed Project will require an individual Section 404 Permit from the USACE San Francisco Bay District, and a Section 401 Water Quality Certification from the RWQCB.

Under the guidance of the U.S. EPA and USACE's Mitigation Rule, proposed dischargers are required to replace lost wetland acreage and functions by providing compensatory mitigation through aquatic resource restoration, establishment, enhancement, and in certain circumstances, preservation. The Mitigation Rule encourages the use of mitigation banks to reduce many risks and uncertainties associated with compensatory mitigation.

In addition, the proposed mitigation will conform to the RWQCB's San Francisco Bay Region (Region 2) Water Quality Control Plan, and "Fact Sheet for Reviewing Wetland and Riparian Projects" by the San Francisco RWQCB.

The project sponsor will work with the USACE and RWQCB to ensure that the proposed compensation complies with federal and State regulations and policies, as described above.

Proposed Compensatory Wetland and Waters Mitigation. The Port will provide mitigation to ensure that there is no net loss of wetlands from the Proposed Project. The Port has identified potential offsite mitigation to compensate for the loss of wetlands and waters of the U.S. Potential mitigation sites were evaluated based on the following selection criteria:

- Schedule Risks (i.e., ability to create wetlands in conjunction with the Proposed Project construction schedule);
- Location (i.e., proximity to the Airport; and whether the proposed mitigation site is located in the same drainage area as OAK);
- Capacity (i.e., available acreage of wetlands); and
- Ecological functions of the wetlands at the mitigation site.

The selected mitigation site will enhance the wetland complex in the San Francisco Bay Area by providing at least a 1:1 replacement ratio for permanently impacted wetlands.

Monitoring performance criteria and reporting requirements will be established in compliance with the USACE's Section 404 Permit, and the RWQCB's Section 401 Water Quality Certification and Waste Discharge Requirements.

The example wetland and waters mitigation site described below also has the potential to provide habitat for federally listed species, such as the Ridgway's rail and others, and could feasibly meet the Port's goal of no net loss of wetlands associated with the Proposed Project.

Example Mitigation Site: San Francisco Bay Wetland Mitigation Bank

Located approximately 10.5 miles south of OAK in Redwood City, the Bank was approved by the U.S. EPA and USACE in August 2011. The 88-acre restoration site, historically tidally influenced and hydrologically connected to Belmont Slough, was diked in the early part of the twentieth century for future urban and commercial development. Prior to restoration, the area contained uplands and some non-tidal wetlands. The site is now restored to full tidal action, with upland refugia habitat such as pickleweed, California cordgrass, and salt grass.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Section 15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

a) Historical Resources as Defined in CEQA Section 15064.5

Historical Resources

Under CEQA, a historical resource (these include built-environment and archaeological resources) is considered significant if it meets the criteria for listing on the California Register of Historical Resources (CRHR). These criteria are set forth in CEQA Section 15064.5, and define as significant any resource that:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Resources that are listed in, or formally determined to be eligible for listing in, the National Register of Historic Places (NRHP), are automatically listed in the CRHR, and are thus considered historical resources for the purposes of CEQA compliance.

Baseline conditions for cultural resources in the OAK Perimeter Dike CEQA-Area of Potential Effects (C-APE) are presented in a technical report produced for the Proposed Project (Hale, 2014), and summarized in this section.

Fill Material

The imported fill is not likely to contain significant cultural resources because any archaeological materials inadvertently transported to the site and used in the reclamation process would not retain sufficient integrity to be considered eligible for inclusion to either the NRHP or CRHR.

Young Bay Mud

The deposit of YBM underlying the fill is the result of rising sea level gradually inundating land surfaces at the end of the last glacial epoch. With the melting of the glaciers, sea levels worldwide began to rise rapidly, at the rate of about 2 centimeters per year. By about 10,000 Before Present (BP), the rising sea flooded in through the Golden Gate to form San Francisco and San Pablo bays. The bays enlarged as sea levels continued to rise at the same rate until about 8,000 BP (Atwater and Hedel, 1976; Atwater et al., 1977). By about 6,000 BP, sea-level rise had declined to a much slower rate of 2 millimeters per year. Between 6,000 and 5,000 BP, this slow inundation was outstripped by sedimentation (marsh deposits) from bayside tributaries, and extensive mudflats and tidal marshes began to develop along San Francisco Bay shores (Ingram, 1995; Lightfoot, 1997). Tidal marshes probably reached their maximum extent by about 2,000 BP (J. West cited in Banks & Orlin, 1984:3.2). Sea levels have continued to rise at a slower rate, and with occasional reversals, into modern times. The YBM and marsh deposits that formed as a result of these sedimentation processes do not represent stable land surfaces, and were therefore unavailable for human occupation. These deposits are therefore not considered sensitive for prehistoric archaeological resources.

Impacts to historical resources as defined in CEQA Section 15064.5 would be less than significant.

Historic Architectural Resources

Inventory efforts for historic architectural resources included a review of historic literature and maps, archaeological and historic architecture base maps and site records, and survey reports on file at the Northwest Information Center of the California Historical Resources Information System at Sonoma State University; a review of properties listed on/as the California Points of Historic Interest, California Historical Landmarks, California Historical Resources Inventory, NRHP, CRHR, and local registries; a review of the Caltrans Statewide Bridge Inventory of Local Agency and State Agency Bridges for Alameda County; supplementary archival research at the Port, the Western Aviation Museum, and various online sources; a review of the historic architectural history technical report completed for the Oakland RSA Project (Lytle, 2011); and a limited cultural resources pedestrian reconnaissance (Hale, 2014).

One historic-era feature, the perimeter dike itself, was identified in the C-APE defined for the Proposed Project. Between 1953 and 1962, the Port constructed the 4.5-mile dike to the southwest and southeast of the original airport, filling a 600-acre area of San Francisco Bay (Sorensen, 1989). This reclamation effort allowed for a major expansion of the airport facilities, including the construction of what is known today as South Field. This initial phase of expansion was completed in 1961. Over the ensuing decades, subsequent extensions of the dike and associated filling occurred, followed by airport-related development, with the last phase completed in the early 1970s.

Initial research has yielded no information indicating a significant association with significant historic events or people (Criteria 1 and 2 of the CRHR). Although the dike allowed for the development of South Field, it does not illustrate any significant association with aviation history, such as the development of aircraft, establishment of commercial airlines, or location of important aviation flights or events that characterize the development of the commercial airline and airport industry in the twentieth century. The dike likewise does not appear to be specifically associated with important people in aviation or airport

engineering history. Furthermore, the dike does not significantly embody the distinctive characteristics of an architectural style, type, or period (Criterion 3 of the CRHR). Research did not result in identifying any key engineers or master architects for whom the runways may illustrate their important works. Similarly, research has provided no indication that the dike has the potential to yield potentially important information (Criterion 4 of the CRHR). Finally, the integrity of the dike has been compromised, because the dike only retains a portion of its 1962 configuration and function; recent materials have been brought in to enlarge and strengthen the dike; and two fuel lines have been placed within it. Therefore, the runway no longer appears as it did during the historic period. Because the dike does not appear to be eligible under any criteria to the CRHR, and no other built-environment historic resources exist in the project area, impacts to this class of historical resources as defined in CEQA Section 15064.5 would be less than significant.

b) Archaeological Resources

In addition to assessing impacts to archaeological resources meeting the requirements for listing as historical resources (analyzed under **Section 3.V-a**), impacts to unique archaeological resources are also considered under CEQA, as described in Section 15064.5, as well as under California PRC (Section 21083.2). If an archaeological site does not meet the criteria for inclusion on the CRHR, as described under **Section 3.V-a**, but does meet the definition of a unique archaeological resource as outlined in PRC 21083.2, it is entitled to special protection or attention under CEQA. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that—without merely adding to the current body of knowledge—there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information;
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

No previously recorded unique archaeological resources have been identified within the footprint of the Proposed Project. Potential impacts to archaeological resources as defined under either CEQA Section 15064.5 or PRC 21083.2 would be less than significant.

c) Paleontological Resources

PRC Section 5097.5 prohibits excavation or removal of any "vertebrate paleontological site, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands." Public lands are defined to include lands owned by—or under the jurisdiction of—the state, or any city, county, district, authority, or public

corporation, or any agency thereof. Section 5097.5 also states that any unauthorized disturbance or removal of archaeological, historical, or paleontological materials or sites on public lands is a misdemeanor. Section 30244 requires reasonable mitigation for impacts to paleontological resources that occur as a result of development on public lands.

Paleontological resources are fossils (the remains of ancient plants and animals) and trace fossils (such as burrows or tracks) that can provide scientifically significant information on the history of life on earth. Assessments of the scientific significance of these remains are based on whether they can provide data on the taxonomy and phylogeny of ancient organisms, the paleoecology and nature of paleoenvironments in the geologic past, or the stratigraphy and age of geologic units. Fossils need not be mineralized to be of scientific significance. In areas dominated by geologically recent sedimentation in estuarine environments (as is the case in the vicinity of the Proposed Project area), the remains of extinct Pleistocene fauna are preserved due to anaerobic (oxygen-free) conditions, and are usually unaltered and not mineralized.

Inventory efforts for paleontological resources included a review of the University of California Museum of Paleontology (UCMP) fossil locality database (http://ucmpdb.berkeley.edu/). No field survey to identify paleontological resources was undertaken because the surface soils, as described previously, are composed entirely of fill material. Because this material was imported, no in-situ paleontological remains would occur in such soils. Any paleontological resource occurring on the ground surface of the Proposed Project area would therefore be of limited scientific value. The archival review did not indicate the presence of previously identified paleontological resources within the confines of the C-APE defined for the Proposed Project.

To assess the potential for the Proposed Project to impact buried paleontological resources, the paleontological sensitivity of the strata underlying the Proposed Project area was assessed. A paleontologically sensitive stratigraphic unit is a sedimentary deposit or sedimentary rock that has a high or moderate potential to yield fossils that may be unique and/or scientifically important. Sensitivity ratings are presented only for those underlying strata that could be encountered during implementation of the Proposed Project. As discussed previously, much of the construction for the Proposed Project would occur on fill used to reclaim the lands on which OAK now resides. As proposed, the project would, however, require excavation through the fill and into the underlying YBM; and in some locations, on into the Posey-Merritt Sands.

Young Bay Mud

Numerous Late Pleistocene and Holocene fossils have been reported from sediments referred to in the San Francisco Bay Area as San Antonio Formations, the marine facies of which appear to be represented by the YBM. Schlocker has reported fossil plant remains from sediments he referred to as “Bay mud and clay” (Schlocker, 1974), while Bonilla reported fossil shells and plant remains from what he termed “Bay Mud” (Bonilla, 1971). The UCMP record search revealed that sediments commonly referred to as YBM have produced a number of plant, invertebrate, and vertebrate fossils at numerous previously recorded fossil sites around the San Francisco Bay Area, including 14 marine invertebrate fossils discovered in similar strata in the City of Oakland. The presence of these previously recorded fossil sites in Late-Pleistocene to early-Holocene sediments suggests that YBM is potentially sensitive for paleontological

resources in this general vicinity. Such marine invertebrate fossils generally are not considered significant fossil resources, because they are typically abundant in similar geologic deposits, and do not represent unique specimens that contribute substantially to scientific knowledge.

Posey-Merritt Sands

These Late-Pleistocene sediments date to the Last Interglaciation (circa 128,000 and 75,000 years ago), during which, for part of this time, sea level was actually higher than the present by 6.5 to 10 feet. Significant terrestrial fossils have been previously recovered from these strata, including by Rodda and Baghai, who reported bones and teeth of mammoth and extinct bison from sands and clays unconformably overlying the Franciscan Complex in downtown San Francisco (Rodda and Baghai, 1993). The UCMP records search, however, did not reveal similar such vertebrate fossil discoveries from similar geologic environments in Alameda County. Therefore, impacts to paleontological resources would be less than significant.

d) Human Remains

Section 15064.5 of CEQA assigns special importance to human remains, and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98.

No previously recorded archaeological sites, including those likely to contain human remains, have been identified in the Proposed Project area. Although it is possible to inadvertently expose unknown archaeological resources during construction, given that the Proposed Project is confined to introduced fill and Bay Mud, it is unlikely that human remains are present and undiscovered within the C-APE as defined for the Proposed Project. Therefore, impacts to human remains would be less than significant.

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

a-i) Alquist-Priolo Earthquake Fault Zone

The project site is in a seismically active region and in close proximity to major active faults in the San Francisco Bay Region. The San Andreas Fault, which lies approximately 13 miles southwest of the project site, dominates the tectonics, geology, and physiography of the San Francisco Bay region. The Hayward Fault, a significant seismic source, lies approximately 5.5 miles northeast of the project site. Other major active faults that could cause significant shaking at OAK include the Concord, Calaveras, Greenville, Mt. Diablo Thrust, San Gregorio, and Rodgers Creek faults (URS/AGS, 2008).

The maximum moment magnitude earthquake (M_{max}) is defined as the largest earthquake that a given fault is considered capable of generating. **Table 3-3** presents a listing of the M_{max} earthquake for each of the major faults in the vicinity of the Airport. The M_{max} earthquake on the Hayward Fault would be a magnitude 7.3 event occurring approximately 5.5 miles from the project site. The M_{max} earthquake on the San Andreas Fault would be a magnitude 7.9 event occurring approximately 13 miles from the Airport (URS/AGS, 2008).

Table 3-3
Fault Seismicity

Fault	Distance to Project Site (miles)	Maximum Moment Magnitude	Slip Rate[1] (inches/year)
Hayward	5.5	7.3	0.35
San Andreas	13	7.9	1.00
San Gregorio	16	7.4	0.27
Calaveras	17	7.0	0.60
Concord	19	6.7	0.20
Greenville	24	6.9	0.08
Rodgers Creek	25	7.0	0.35

Notes

[1] Average rate at which the fault moves per year.

Source: URS/AGS, 2008; Working Group, 2003

The project site is in a seismically active area; however, it is not in an Alquist-Priolo Special Studies Zone because the active Hayward Fault, the active fault closest to the Airport, does not cross the Airport boundaries (URS/AGS, 2008). The Proposed Project would include seismic improvements to the perimeter dike to achieve acceptable seismic performance in the event of an earthquake. Therefore, the Proposed Project would increase seismic stability and reduce potential risks associated with exposure of people or structures to the rupture of a known fault, and result in less-than-significant impacts associated with the rupture of a known earthquake fault.

a-ii) Seismic Ground Shaking

As noted above, the project site is in a seismically active region, and it is likely that the perimeter dike will be subjected to strong ground motion generated by future seismic events on the active faults in the area (URS, 2015). Seismic deformation analyses of the existing perimeter dike conditions indicated that clay sections of the dike would experience acceptable deformation during an earthquake similar to the 1989 Loma Prieta Earthquake, but sand sections would undergo widespread liquefaction and unacceptable seismic deformations (URS, 2015).

The Proposed Project includes seismic improvements to the perimeter dike, which involves installing replacement stone columns in certain sand sections of the dike. Where the fuel pipelines are present, the proposed improvements include the installation of soil-cement blocks outboard of the pipelines, and replacement stone columns inboard of the pipelines. Both improvement methods would extend through the sand and penetrate approximately 2 feet into the underlying YBM. The depth of improvements would range between approximately 12 and 39 feet below the existing ground surface along the dike crest. The proposed improvements would address potential liquefaction and reduce seismic deformations to acceptable levels (URS, 2015). The Proposed Project would reduce potential risk or impacts resulting from strong seismic ground motion. Therefore, the Proposed Project would result in less-than-significant impacts associated with seismic ground shaking.

a-iii) Seismic-Related Ground Failure

Engineering analyses of the perimeter dike indicated that the sandy dike fill is primarily classified in the Unified Soil Classification System (ASTM D-D-2487, 2011) as poorly graded sand (SP), poorly graded sand/silty sand (SP-SM), or silty sand (SM) (URS, 2015). Therefore, based on the criteria of Seed et al., (2003) and Boulanger and Idriss (2006), the sandy dike fill could liquefy if saturated and subjected to sufficient levels of ground motion (URS, 2015). During the 1989 Loma Prieta Earthquake, the sand fill in and near the dike did liquefy, with sand boils, settlement, and lateral spreading observed and attributed to liquefaction of the sandy fill underlying the runways and taxiways (Kayen et al., 1998). The liquefaction susceptibility analyses indicate that, on average, approximately 70 percent of the sandy fill materials are susceptible to liquefaction when subjected to design ground motions. The liquefaction may result in lateral spreading and large deformations (URS, 2015). Based on this liquefaction susceptibility evaluation, all of the saturated sand fill is assumed to be liquefiable. As described under **Section VI-a-ii** above, the proposed seismic improvements would reduce the liquefaction of the sand dike to acceptable limits in the event of an earthquake similar to the 1989 Loma Prieta Earthquake (URS, 2015). The implementation of seismic improvements associated with the Proposed Project would reduce the potential of liquefaction and associated deformation during an earthquake, and would therefore result in less-than-significant impacts.

a-iv) Landslides

The Proposed Project is located in an area of relatively flat topography. Therefore, landslides are not anticipated. As such, the Proposed Project would have no impacts related to landslides.

b) Substantial Erosion

The Proposed Project would protect the perimeter dike from erosion, and would include the placement of riprap or concrete rubble on the existing crest structure to prevent the underlying fill materials from being eroded by wave action. The portions of the perimeter dike constructed during the second phase of construction in the 1960s experienced considerable damage as a result of a severe winter storm in December 1983 (Subsurface Consultants, Inc., 1984). Wind-induced waves overtopped the dike and caused erosion of the inboard slope. The existing crest structure and erosion protection on the outboard slope is a combination of broken concrete rubble and rock riprap laid directly on top of the dike fill, without a filter fabric or bedding layer to prevent erosion of the underlying fill materials.

During implementation of the proposed improvements, the ground surface would be temporarily disturbed, which could increase the potential for soil erosion, and cause an increase in suspended solids in surface water runoff and local receiving waters. The Proposed Project would comply with local ordinances for grading, drainage, and construction of improvements, and would include an erosion control plan that would be part of the SWPPP described in **Section 3.IX – Hydrology and Water Quality** of this report. Compliance with the SWPPP would reduce impacts associated with erosion during construction. In addition, the proposed improvements would armor the perimeter dike to protect against erosion that could result from waves washing over the dike crest during a 100-year flood event. Therefore, impacts of the Proposed Project associated with soil erosion would be less than significant.

c) Unstable Geologic Unit

Soil types at the perimeter dike include dike fill, soft YBM, underlying competent native Merritt/Posey Sands, and Old Bay Mud (OBM). The dike fill consists of medium-stiff clay containing shells derived from Bay Mud, and loose to medium-dense sand and gravel. The thickness of the fill ranges from approximately 10 to 20 feet. The dike fill is underlain by soft to medium-stiff silty clay along the dike alignment, except at the western end, where it is underlain by predominantly clayey sand/silty sand. The consistency of the YBM beneath the dike varies from soft to medium-stiff, whereas the consistency is generally soft outside the footprint of the dike. The thickness of the YBM ranges from 0 to 25 feet. The YBM is underlain by medium-dense to dense silty and clayey sands. This layer of soil is composed of materials identified as Posey and Merritt Sands. Both of these sand units are believed to be non-marine sediments. The Posey Sand is a clayey sand typically deposited in broad channels. The Merritt Sand is fairly clean sand deposited by eolian (wind) action. The thickness of this layer varies between 5 and 30 feet. In general, the Posey/Merritt Sand layer is underlain by stiff to very stiff clays, which are referred to as OBM. These overconsolidated clays are characterized by low compressibility and water content (URS, 2011).

As discussed above, approximately 70 percent of the sandy fill materials are susceptible to liquefaction when subjected to strong ground motions similar to the 1989 Loma Prieta Earthquake. Analyses of the clay dike fill concluded that this section of the dike would not exhibit sand-like liquefaction behavior during a ground-shaking event. The proposed dike improvements would reduce the potential for liquefaction and subsequent deformation of the sand dike to acceptable limits.

Raising the dike crest by 1 to 2 feet would result in approximately 3 to 8 inches of settlement in the underlying YBM at the dike centerline. Differential settlement along the dike is anticipated to be relatively small, given the small amount of fill to be placed on the dike crest and the relatively long reaches over which the depth of new fill changes (URS, 2015). Therefore, impacts of the Proposed Project associated with the soil instability would be less than significant.

d) Expansive Soils

As discussed, soils that underlie the perimeter dike include dike fill, soft YBM, underlying competent native Merritt/Posey Sands, and OBM. No indications of potentially expansive soil (i.e., soil with shrink-swell potential) are contained in the soil descriptions (USDA, 1981). Because these types of soils are granular in nature, they are not susceptible to shrinking and swelling. Therefore, the proposed-project's impacts associated with soil expansion would be less than significant.

e) Wastewater

Septic tanks or alternative wastewater disposal systems are not an element of the Proposed Project. Therefore, the Proposed Project would have no related impacts.

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

Regulatory Background

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32; California Health and Safety Code Division 25.5, Section 38500 et seq.), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures so that statewide GHG emissions will be reduced to 1990 levels by 2020.

AB 32 required CARB to adopt regulations by January 1, 2008, that identify and require selected sectors or categories of GHG emitters to report and verify their statewide GHG emissions; CARB is authorized to enforce compliance with the program. Under AB 32, CARB was also required to adopt a statewide GHG emissions limit by January 1, 2008, equivalent to the statewide GHG emissions levels in 1990, which must be achieved by 2020. CARB established this limit, in December 2007, at 427 million metric tons of CO_2e. On January 1, 2011, CARB adopted rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 permits the use of market-based compliance mechanisms to achieve those reductions. By January 1, 2012, the rules and market mechanisms adopted by CARB took effect and are legally enforceable. The cap-and-trade program started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions. Full implementation of AB 32 and its timeline may be subject to legal challenges.

Significance Threshold A GHG assessment was performed for the Proposed Project. The GHG assessment focused on construction emissions because the Proposed Project would not have any operational changes to OAK. The assessment was conducted in accordance with the BAAQMD *California Environmental Quality Act* (*CEQA) Air Quality Guidelines* (adopted on June 2, 2010, and updated in 2012) (BAAQMD, 2010a).

BAAQMD guidelines state that the Lead Agency should quantify and disclose GHG emissions, and make a determination of the significance of these emissions in relation to AB 32.. The assessment uses the BAAQMD significance threshold of 1,100 metric tons of carbon dioxide equivalents (CO_{2e}).

a) Greenhouse Gas Construction-Phase Emissions

GHG emissions associated with construction activities were quantified using the CalEEMod emissions model. Detailed model input and output are provided in **Appendix A: Air Emissions Modeling Results**.

Estimated GHG emissions associated with project construction are presented in **Table 3-4**. As indicated, the total construction-related GHG emissions would be approximately 818 metric tons of CO_2e over the construction period, which lasts approximately 28 months. For construction projects, GHG emissions are typically quantified and amortized over the life of the project (i.e., the duration until which the project element would be required to be replaced). To amortize the emissions over the life of the project, the total GHG emissions for the construction activities are divided by the project life (typically assumed to be 30 years, but varying by project). Thus, the construction GHG emissions amortized over a 30-year period would equal 27.3 metric tons per year.

Table 3-4
Construction-Related Greenhouse Gas Emissions Estimates

Construction GHG Emissions	CO_2e (metric tons)
Total construction emissions	818
Amortized over 30 years	27.3
BAAQMD Threshold	1,100
Significant	NO

Notes:
CO_2e = carbon dioxide equivalents

b) Conflicts with Plans, Policies, or Regulations for Reducing Greenhouse Gas Emissions

The Proposed Project would not conflict with the State's GHG reduction goals, as defined in AB 32. The Proposed Project would have construction emissions that are less than emission levels the BAAQMD has determined to be less than significant for operational (i.e., annual) emission sources. Therefore, because the Proposed Project would only have these small emissions during construction, and the Proposed Project would not change baseline airport operations, the Proposed Project would not result in GHG emissions that would have a significant impact on the environment, nor would the Proposed Project conflict with any local policy, plan, or regulation adopted for the purpose of reducing GHG emissions; and GHG impacts would be less than significant.

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

a) Transport, Use, and Disposal of Hazardous Materials

Use of hazardous materials and other similarly regulated substances at the Airport include the fueling, servicing, and repair of aircraft, ground support equipment, and motor vehicles; the operation and maintenance of the airfield, main terminal complex, and parking facilities; and a range of other special-purpose facilities and operations connected with aviation (i.e., rental car and air cargo facilities, navigation, and air traffic control functions). The largest overall quantities of substances used at OAK that are classified as hazardous are aircraft and motor-vehicle fuels. Other, smaller amounts of petroleum products (e.g., lubricants and solvents), waste materials (e.g., used oils, used filters, cleaning residues, and spent batteries), and manufactured chemicals (e.g., herbicides, fertilizers, paints, fire-fighting foam, and de-icing fluids) are stored in various locations throughout the Airport. Bulk aircraft fuels are stored in above-ground storage tanks, and below-grade pipelines are used to transfer fuels to fueling locations.

These materials and substances are characteristically used on a routine basis in support of aircraft, ground support equipment, and motor vehicle maintenance operations, and for a range of other similar functions to operate the Airport and to meet aviation safety requirements.

Hazardous materials similar to those already in use at the Airport would be used during construction (e.g., fuels and lubricants). If not handled properly, the use of hazardous materials could be a potentially significant impact. The transport, storage and use of these hazardous materials would be regulated under existing local, state, and federal environmental regulations and the Port would require the contractor to report any release of hazardous materials. In addition, the Port would implement **Mitigation Measure HZ-1,** ***Hazardous Materials Handling Documentation***, to reduce the potential impacts resulting from the routine transport, use, and handling of hazardous materials. Under **Mitigation Measure HZ-1**, the Port would require the contractor to store and handle hazardous materials according to local, state, and federal regulations, and to report any release of hazardous materials. With the implementation of **Mitigation Measure HZ-1**, impacts related to routine transport, use, and handling of hazardous materials is expected to be less than significant with mitigation.

b) Accidental Spills

Below portions of the service road on the crest of the perimeter dike, there are two active pipelines; They are 10 inches and 12 inches in diameter, and is owned by SFPP/KMEP. The 10-inch pipeline is currently used for multi-product fuel, and the 12-inch pipeline is currently used for jet fuel to supply the San Francisco International Airport. These pipelines, situated in the perimeter dike, extend from beyond the eastern limit of the Proposed Project (Station 0) to a point near the western end of Runway 12/30 (Station 203), then turn south and extend into San Francisco Bay. The pipelines are within 1.6 to 5.2 feet of each other, within 18 feet inboard of the outboard edge of the service road, and at a depth ranging between 2.7 and 6.2 feet below the crest of the dike (URS, 2015).

The proposed improvements, in particular raising the crest of the dike by up to 2 feet, and construction of seismic improvements on either side of the fuel lines within the sand dike, could potentially impact the two active fuel pipelines. The most significant portion of the dike that would be raised is between Station 15 and Station 75. Raising the dike crest 1 to 2 feet would result in approximately 3 to 8 inches of settlement in the underlying YBM at the dike centerline. The computed settlements are anticipated to occur over long distances of the dike, and therefore are not expected to result in significant strain on the pipeline joints (URS, 2015). In addition, SFPP/KMEP has conducted an assessment of the pipelines conditions and their ability to withstand loads incurred by the improvements to the dike. Based on the SFPP/KMEP assessment, the pipelines could withstand both the construction and long-term loads that could result from raising the crest of the dike (SFPP, L.P., 2011). ~~It is estimated that the pipelines would undergo up to approximately 1 to 1.4 feet of horizontal and vertical movements, respectively, as a result of the Proposed Project.~~ Pipeline stress analyses performed to determine the resulting stresses of the Proposed Project at critical locations (such as the sand dike), indicated that limits of pipelines stress are reached at lateral displacements of 40 inches (3.33 feet). This is considerably more than the estimated total horizontal and vertical movements that would result from implementation of the proposed improvements (SFPP, L.P., 2011). Furthermore, the Proposed Project would reduce the risk from potential levee failure associated with the perimeter dike. Under the existing conditions, the perimeter

dike could potentially be breached during a 100-year flood event or during a seismic event; this could damage the active fuel pipelines, resulting in potential injury or loss of life, temporary suspension of Airport operations, release of fuel into wetlands and San Francisco Bay, and/or disruption of fuel supply to OAK and San Francisco International Airport. Therefore, the Proposed Project would improve the baseline stability of the fuel pipelines, and reduce the potential overall deformation of the perimeter dike in the event of an earthquake. As such, impacts to the active fuel lines associated with raising the crest of the dike would be less than significant.

The proposed seismic improvements to the dike would include in-situ soil stabilization using replacement stone columns inboard of the two active SFPP/KMEP fuel pipelines, and soil-cement blocks on their outboard side. The locations of seismic improvements with respect to the active fuel pipelines are between Stations 70 and 80 and Stations 168 and 202 (see **Figure 2-3**). Installation of stone columns would involve the displacement of soil as stones are vibrated or compacted into the columns, near the fuel pipelines. Installation of soil-cement blocks would involve mixing cement grout into the soil as it is augured, which would result in less ground heave than installation of stone columns.

During construction, the proposed seismic improvements near the two active SFPP/KMEP fuel pipelines would include excavation and drilling, and could result in a combination of differential ground heave (upward soil expansion) horizontally and vertically and settlement along the pipelines. Stone columns and soil-cement blocks would be placed as close as approximately 5 feet to the pipelines. In general, in-situ soil treatment would extend through the sand fill to approximately 2 feet into the underlying YBM. Excavation or drilling in areas close to the active fuel pipelines could result in a significant hazard associated with the rupture of the fuel pipelines. It would be impractical to shut down the two active SFPP/KMEP pipelines for 28 months during construction, because these pipelines provide the main supply of fuel for customers in San Francisco and the San Francisco Peninsula, including the San Francisco International Airport (Herman, 2015b). Any work near the fuel pipelines, including locating them, would be conducted in conformance with state law as outlined in California Government Code Section 4216 *et seq*,[12] related to the protection of subsurface installations from damage during excavations. To avoid any potential damage to the active SFPP/KMEP fuel pipelines, the Port would implement **Mitigation Measure HZ-2, *Active Fuel Pipeline Hazards***.

Under **Mitigation Measure HZ-2**, the fuel pipeline locations would be determined, Underground Service Alert (USA) 811 would be contacted, and a survey of the existing pipelines' conditions would be performed before construction. **Mitigation Measure HZ-2** would also require monitoring during construction and a final conditions survey at the conclusion of construction. The Port would ensure that SFPP/KMEP monitors in-situ soil treatment adjacent to the active fuel pipelines, and shuts down the pipelines in the event of any evidence of a potential rupture. With the implementation of **Mitigation Measure HZ-2**, accident conditions associated with the release of hazardous materials would be less than significant.

Hazardous materials releases to the environment are regulated by federal and state regulations and agencies. The Alameda County Department of Environmental Health serves as the Certified Unified

[12] Requires planned excavations near subsurface installations to be conducted in a specified manner that protects the subsurface installations from damage.

Program Agency (CUPA) and the Local Enforcement Agency, and enforces federal and state regulations pertaining to hazardous materials and compliance with hazardous waste generator and underground storage tank (UST)/aboveground storage tank regulations. The Alameda County Department of Environmental Health is the lead on hazardous materials enforcement, oversight at leaking UST and other selected contaminated sites, and regulates solid waste countywide. The California Department of Toxic Substances Control and RWQCB compile and maintain lists of potentially contaminated sites throughout the state.

An assessment was conducted to identify sites and facilities that are known, suspected, or likely to contain or store hazardous materials, and to identify areas of known subsurface soil and/or groundwater contamination at OAK and in the project vicinity. To assess these sites of potential concern, a database containing federal, state, and local regulatory agency file information was searched (EDR, 2011). A radius map database report prepared by Environmental Data Resources, Inc. (EDR) was used as a screening tool to identify known hazardous materials release sites, generators of hazardous waste(s), UST sites, etc., that are reported to be present in the general vicinity of the Airport. Hazardous materials release sites on and listed within 0.25 mile of the Airport were evaluated in greater detail.

The database report identified approximately 70 sites within 0.25 mile from the project site. However, location information included in the database records was often incomplete, and many records were mapped at the approximate center of the North Field rather than at the actual release location on the Airport. For these reasons, all sites mapped within OAK and within 0.25 mile from the project site were reviewed to assess the potential for contamination and for impacts to occur. In addition to the EDR record search, a review of site-specific reports from the Port's environmental files was performed. The review identified sites relevant to this analysis that were not mapped by EDR (Port, 2003). Furthermore, the review provided additional information about the listings identified in the EDR report at the Airport and within a 0.25-mile radius (LFR, 2008a, 2008b). The releases at the sites identified have primarily been of petroleum hydrocarbons from leaking USTs, and jet fuel releases from surface spills and below-grade pipeline leaks. Based on the record search and files review, site investigations have concluded that contaminants from past releases at the Airport are either absent or present only in low levels in the soil or groundwater; and that the regulatory agencies have recommended no further action (Port, 2003; LFR, 2008a, 2008b; EDR, 2011). Other sites within a 0.25-mile radius of the project site were either listed because they generate hazardous waste routinely without indication of a release, or were reported fuel releases from fuel pipelines that were not associated with a specific location and could not be researched further.

The Airport was partially developed on portions of San Francisco Bay that were filled, using imported fill materials, from the 1920s to the 1960s. The South Field was generally filled with sand dredged from San Francisco Bay, and the North Field was filled with a mixture of materials (Sorensen, 1989). These fill materials may have included contaminated soils; however, the Port's Environmental Division has no evidence that the fill at the Airport contains any contaminants (Heinze, 2012). Construction activities would include excavation up to approximately 39 feet. In addition, installation of soil-cement blocks would involve mixing cement grout into the soil as it is augered, which would generate soil-cement spoil material. Previous studies have indicated that groundwater occurs within 1 foot of the ground surface. Potential construction impacts associated with the Proposed Project may include the possibility of

encountering soil and/or groundwater contamination in select areas, and the handling of hazardous materials typically associated with construction. In addition, the spoil material generated during the installation of the soil-cement blocks may include contaminated soil. This could be a potentially significant impact. To reduce the potential impacts of contaminated soil and groundwater during construction, the Port would ensure that the contractor submits a soil and groundwater management plan for the handling, storage, treatment, and/or testing of contaminated soil and/or groundwater, including dewatering, and implements BMPs presented in **Section 2.6** of this document.

To further reduce these impacts, the Port would implement **Mitigation Measure HZ-3, *Contaminated Soil and/or Groundwater***. Under **Mitigation Measure HZ-3**, the Port would ensure that the contractor's construction plans and specifications include provisions for the handling of contaminated soil and groundwater, in compliance with all applicable federal and state regulations. With the implementation of this mitigation measure, the potential for impacts related to hazardous materials handling and potentially contaminated soil and/or groundwater would be reduced to a less-than significant level.

c) Within One-Quarter Mile of Schools

No existing or planned elementary, middle, intermediate or high schools are within 0.25 mile of the project site. The Lighthouse Charter School is approximately 7,800 feet northeast of the project site, Brookfield Elementary school is approximately 7,600 feet northeast of the project site, and the James Madison Middle School is approximately 6,700 feet northeast of the project site. Private schools and daycare centers appear to be located approximately 4,000 feet north and 1,500 feet northeast of the project site. Therefore, the Proposed Project would have no impacts associated with hazardous emissions, or handling of hazardous material, on an existing or planned school.

d) Hazardous Materials Sites Pursuant to Government Code Section 65962.5

Although several release sites are listed in the proximity of the project site, and some are listed on the "Cortese" list compiled pursuant to Government Code Section 65962.5, the project site is not itself on the Cortese List. Therefore, the Proposed Project would have less-than-significant impacts associated with lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) Public Airport

The Proposed Project would be constructed on Airport property, with a small portion in the City of San Leandro, and involves improving the perimeter dike to comply with the FEMA requirements for 100-year flood protection, and to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake. The Proposed Project would not result in any associated changes in aviation activity or runway closure at the Airport during or after construction. The Port would prepare a Safety Management Plan for construction of the Proposed Project. Implementation of the Safety Management Plan would provide the Port with a formal, top-down, systemic approach to managing safety risk, including the appropriate organizational structures, responsibilities, and policies and procedures required. Furthermore, the Proposed Project would enhance safety and reduce potential hazards related to flooding and seismic events. Therefore, the Proposed Project would not cause any significant safety hazards for people residing or working in the project area, and impacts would be less than significant.

f) Private Airstrip

OAK is a public airport, and there is no private airstrip in the vicinity of the Proposed Project. Therefore, the Proposed Project would have no impacts associated with the proximity to a private airstrip.

g) Interference with Emergency Plans

The Proposed Project would not result in any changes in operations or aviation activity at OAK. The number of workers or passengers/customers using OAK would not increase; therefore, the Proposed Project would not adversely affect an emergency evacuation. As discussed in **Section 3.XVI – Transportation/Traffic**, construction-related traffic would be limited to the construction period, and would not pose an obstacle to emergency response vehicles. Any temporary increases in traffic volumes related to construction activities are expected to be less than significant. In addition, construction activities would be restricted to the proposed improvements of the perimeter dike, and would not occur in the right-of-way of any public roadways. Therefore, the Proposed Project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

h) Wildfires

There are no wildlands in the project area, and there is no risk associated with wildlands fires at the project site. Therefore, the Proposed Project's would have no impact associated with the exposure of people or buildings/structures to the risk of wildlands fires.

Hazards and Hazardous Materials Mitigation Measures

The following mitigation measures apply to impacts identified in **Sections 3.VIII-a, b,** and **d**.

Mitigation Measure HZ-1 – Hazardous Material Handling Documentation

During construction, hazardous materials (i.e., fuel, waste oil, solvents, paint, and other hydrocarbon-based products) would be used in quantities that are typical of the construction industry. The Port shall require the contractor to comply with the safety and environmental submittals detailed in Section 01340 of the Port's contracts documents for contractors' submittals. The construction contract documents shall require that these materials be identified in an inventory, that current Material Safety Data Sheets be available on site, and that the hazardous materials be stored, labeled, and disposed of in accordance with applicable regulations. The contractor shall be held responsible for reporting any release of hazardous materials or other similar substances (in amounts above their reportable quantities).

Mitigation Measure HZ-2 – Active Fuel Pipelines Hazards

Prior to performing boring tests to determine treatment depths and in-situ soil treatment associated with the Proposed Project, the exact locations of the two active fuel pipelines shall be verified. Furthermore, a survey of the existing conditions, an optical survey[13] of the pipelines, and a survey of the background levels of vibration shall be performed before construction begins. During construction, vibration levels

[13] An optical survey is performed using a robotic survey instrument that measures changes on prisms installed right on pipes.

and monitoring of the pipeline displacement using optical surveying, settlement monitors, or borehole extensometers shall be performed. In addition, a test section shall be performed at a location of the sand dike without pipelines prior to installation of in-situ soil improvement adjacent to the pipelines, to demonstrate that the in-situ soil improvement methods and procedures being used would not damage the pipelines. A dummy pipeline shall be installed in the test section to demonstrate that the improvement methods will not damage the pipelines. The Port, its contractor and SFPP/KMEP shall develop an Action Plan for construction activities near the pipelines, and shall monitor in-situ soil treatment adjacent to the active fuel pipelines, and provide and respond immediately to shut down the pipelines in the event of a rupture. After construction is complete, a final conditions survey of the pipelines shall be conducted to ensure that the pipelines have not been damaged.

Mitigation Measure HZ-3 – Contaminated Soils and/or Groundwater

Previous excavation activities along the perimeter dike by Shell Pipeline and the Port have not encountered contaminated soils or groundwater, and there is no record of the pipelines leaking along the perimeter dike. However, if contamination is encountered during construction, the Port shall ensure that the contractor's Soil and Groundwater Management Plan has provisions for the handling, storage, treatment, and/or testing and disposal of hazardous materials, contaminated soil, and/or groundwater in accordance with federal, state, and local regulations.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY					
Would the project:					
a)	Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

a) Water Quality Standards and Waste Discharge Requirements

The RWQCB reviews actions at OAK that may affect receiving waters; and administers the NPDES program, pursuant to the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) and the federal CWA (33 USC Section 1257 et seq.). The NPDES program was developed by the U.S. EPA in accordance with Sections 303 and 402 of the CWA. The objective of the federal CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Specific sections of the CWA control discharge of pollutants and wastes into marine and aquatic environments. The CWA requires states to set standards to protect water quality. In California, the NPDES program is

administered by the State Water Resources Control Board (SWRCB), with implementation and enforcement by the RWQCBs. The Porter-Cologne Act established the SWRCB and nine RWQCBs as the primary state agencies with regulatory authority over water quality and surface water rights allocation. Requirements of the Porter-Cologne Act are implemented by the SWRCB at the state level, and the RWQCBs at the regional level.

The Port has an Airport-wide Storm Water Pollution Prevention Plan and is implementing a sampling and analysis plan for storm water discharges at the Airport (Port, 2014). This SWPPP was developed in accordance with Order 2014-0057-DWQ requirements and is associated with an updated Industrial General Permit Notice of Intent (NOI) filed for the OAK.

All projects involving construction activities that disturb 1 acre or more of land are required to apply for coverage under the SWRCB's NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, 2009-0009-DWQ, as amended by NPDES No. 2010-0014-DWQ NPDES No. CAS000002 (General Construction Permit). To obtain coverage under the permit, OAK would submit Permit Registration Documents that would include a Notice of Intent to comply with the General Construction Permit, a risk assessment to address project sediment risk and receiving water (watercourse such as a stream or ocean into which stormwater is discharged) risk, post-construction hydrology calculations, a site map, and a project-specific SWPPP for construction activities. BMPs that would be implemented during construction must be identified in the SWPPP. Additionally, post-construction management measures must be prepared, and a long-term maintenance plan must be implemented at the completion of construction (for projects constructed on or after September 2, 2012, this is a mandatory requirement).

The Proposed Project would protect the Airport from 100-year flood, and would improve the ability of the perimeter dike to withstand earthquake events by raising the perimeter dike crest, installing geotechnical supports and soil improvements, and armoring the dike crest. Construction activities include clearing vegetation; grading; excavating; placing aggregate and riprap; installing seepage cutoff walls, soil-cement block, stone columns, and drainage systems in the levee; and constructing an earthen fill berm. These construction activities have the potential to temporarily cause erosion, sedimentation, and increased turbidity in water bodies, and thereby affect water quality. . In addition, the handling of hazardous materials typically associated with construction activities could result in the accidental release of fluids, such as fuel or oils, or in leaking from vehicles and equipment, which has the potential to decrease water quality.

Excavation and/or installation of geotechnical supports for the dike would occur up to a depth of approximately 39 feet. The Airport has a relatively shallow groundwater table, with the potential for groundwater to occur within 1 foot of the ground surface (Port, 1997). In addition, seepage from San Francisco Bay may be present in the dike.

The Proposed Project may impact up to 5.26 acres of non-tidal wetlands and waters of the U.S. The CWA prohibits the discharge of dredged or fill material into waters of the U.S.—unless a Section 404 permit is issued by the USACE, and a Section 401 Water Quality Certification is issued from the state in which the discharge originates (33 USC 1344). In addition, the Porter-Cologne Act requires all discharges into waters of the state to be authorized through a Report of Waste Discharge (California

Water Code Section 13260). See **Section 3.X – Land Use and Planning** for information regarding fill placed within BCDC jurisdiction. After construction is complete, all temporary fill would be removed and the affected areas returned to pre-construction conditions.

The Port would implement the BMPs described in **Section 2.6** of this document, such as covering soil piles, installing silt fences, straw wattles, proper storage and handling of hazardous materials, and practicing good housekeeping to minimize impacts to water quality.

In addition, the project-specific SWPPP would include specific BMPs to address the storage, handling, and disposal of fuel, oils, and other wastes from project construction activities, which could include, but are not limited to, regular maintenance of construction equipment; fueling and servicing equipment in designated locations away from water bodies; regular waste disposal; and site maintenance during construction, to reduce the potential for pollutants to enter water bodies. The Port would implement **Mitigation Measures HZ-1, HZ-2,** and **HZ-3,** described in **Section 3.VIII – Hazards and Hazardous Materials**, which would regulate the use of hazardous materials during construction, provide fuel pipeline monitoring during construction, and ensure appropriate handling of contaminated soils and groundwater if encountered during construction. These measures would reduce the potential impacts to surface and groundwater quality during construction to less-than-significant levels. Furthermore, the Port would implement **Mitigation Measure AQ-1,** described in **Section 3.III – Air Quality**, to reduce fugitive dust impacts, and therefore reduce indirect impacts of dust emissions to water quality. With the implementation of **Mitigation Measures HZ-1, HZ-2, HZ-3,** and **AQ-1**, the Proposed Project's impacts to water quality during construction would be less than significant. The Port would also implement **Mitigation Measure BO-4,** described in **Section 3.IV – Biological Resources**, to reduce impacts on wetlands and waters of the U.S.

The Project would reduce erosion associated with long-term airport operations, and thereby improve water quality over the long term. Improvements such as placing new riprap on the levee slopes would reduce erosion during airport operations. Similarly, armoring the dike crest through the installation of riprap would provide protection against erosion that could result from waves washing over the dike crest during a 100-year flood event (between Stations 80 to 90 and Stations 243 and 250).

All sampling, monitoring, and reporting that is required under existing permits would continue to be performed during construction and operations to ensure that OAK is in compliance with water quality standards. As noted above, the contractor would comply with all conditions attached to the Section 401 Water Quality Certification/Waste Discharge Requirements.

By complying with Section 401 Water Quality Certification/Waste Discharge Requirements monitoring storm water quality, and implementing mitigation measures listed above, impacts to water quality resulting from the Proposed Project would be less than significant.

b) Groundwater Supply and Recharge

Implementation of the Proposed Project would not require the use of groundwater resources during construction or operations. However, during construction, activities that require excavation into the dike,

such as installation of the seepage cutoff wall or drainage system, could encounter groundwater or bay seepage. In such a case, temporary dewatering may be required.

OAK is on the East Bay Plain, which has a major aquifer system (Port, 1997). Groundwater may occur in confined or unconfined conditions in the East Bay Plain. The majority of the shallow, confined aquifers are 20 to 60 feet below ground surface. Unconfined groundwater is in permeable aquifers, and may be recharged through surface percolation. The Airport has a relatively shallow groundwater table, with the potential for groundwater to occur within 1 foot of the ground surface. The depth to groundwater may vary depending on seasonal precipitation and tidal fluctuation, but does not fall much lower than the msl of San Francisco Bay.

The majority of the construction is likely to involve the use of soil, rocks, concrete, and other materials to increase the height, bulk, and density of the dike. Other improvements would use techniques such as vibrating shafts that would not require excavation into the dike. Some improvements would entail excavation and/or removal of soils, and backfilling with cement or rock. Excavation and/or installation of geotechnical supports for the dike would occur up to a depth of approximately 39 feet. Groundwater or bay seepage water may need to be dewatered from these areas during construction. In addition, for construction of the stability berms or temporary working platforms, it may be necessary to lower the water surface elevation in the adjacent wetlands, depending on the water level in the wetlands at the time of construction. Although construction may require dewatering, groundwater would not be substantially depleted because dewatering would only occur temporarily, and would not remove more water than would be necessary to perform the project construction activities.

Operational activities as a result of the Proposed Project are expected to remain the same as under existing conditions. Impervious earth fill materials that are suitably strong for use as a sub-base for the gravel-surfaced access road, such as low-plasticity clays, clayey sands, and clayey gravels, would be more impervious to infiltration than existing sand soils; as would soil improvements installed to strengthen the dike, such as the soil-cement, seepage cutoff walls, and stone columns. Given the permeability of the surrounding areas, construction activities are not anticipated to interfere with the groundwater recharge. Therefore, the Proposed Project would have no impacts to groundwater resources or supplies during operations.

Accordingly, impacts to groundwater supplies and groundwater recharge from construction and implementation of the Proposed Project would be less than significant.

c) Erosion or Siltation On or Off Site

Stormwater drainage and sanitary systems are separated at OAK. The Airport drainage system is mainly a water detention system that is composed of storm drain inlets, underground pipes, ditches, swales, channels, culverts, and retention basins. Stormwater runoff is discharged via pumping to either San Leandro Bay or San Francisco Bay. There are currently six pump houses operating at the Airport: two of these pump houses, Pump House No. 4 and Pump House No. 6, serve the project area, as shown on **Figure 3-2**. Discharges from both of these pump houses are directed to San Francisco Bay.

The Proposed Project would not substantially modify the storm drain system, or change the amount or quality of runoff entering the system. Although the Proposed Project would include engineered-installation drainage systems on the inboard side of the dike to collect and control seepage water where installation of a seepage cutoff wall in the dike crest is not feasible, these improvements would not change drainage patterns, and would not change the areas drained by the pump houses serving the project area. During operations, runoff would continue to be directed to the existing detention basins at the pump houses, where sediments and potential pollutants would settle, prior to discharge to San Francisco Bay.

The Proposed Project would not substantially change the overall permeability of the dike in a manner that would increase surface water runoff from the dike. The Proposed Project would not change existing drainage patterns. Therefore, the impacts related to runoff quantity and flow direction in the drainage areas for Pump Houses No. 4 and No. 6 would be less than significant.

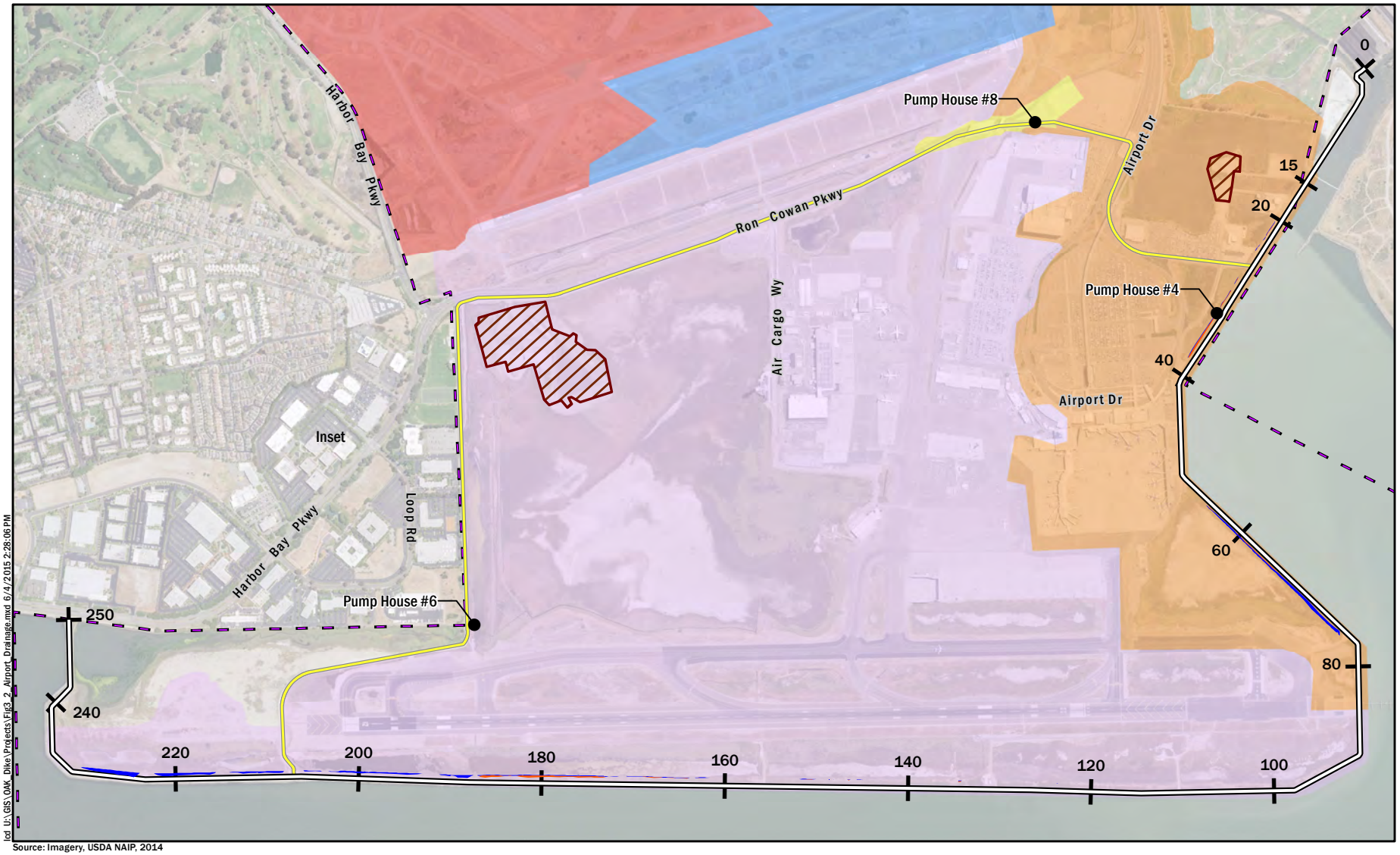
As described under **Section 3.IX-a** above, the clearing, grading, and excavation activities during construction could expose soils to erosion and result in sediment discharge to onsite drainages. Impacts resulting from construction activities would be temporary. BMPs, including erosion control measures such as straw wattles, sediment traps, and silt fences, would be implemented during construction in accordance with federal, state, and local requirements, to minimize the potential for erosion or siltation.

The Proposed Project would install new riprap on the dike crest and slopes to protect the dike from erosion, thereby reducing the potential for siltation. These improvements would not modify the drainage patterns. During operations, runoff would continue to be directed to the existing detention basins at the pump houses, where sediments and potential pollutants would settle prior to discharge to San Francisco Bay.

Because BMPs and erosion control measures would be implemented during construction and the dike would be armored for protection against erosion, the Proposed Project would not result in substantial erosion or siltation on or off site. Therefore, the Proposed Project's impacts on soil erosion and siltation would be less than significant.

d) Flooding from Surface Runoff

As described under **Section 3.IX-c** above, the Proposed Project would not alter the existing drainage patterns or increase the rate or amount of surface runoff from the site. The Proposed Project would provide protection from a 100-year flood event, and would therefore result in beneficial impacts associated with flooding. Therefore, impacts associated with flooding from surface runoff would be less than significant.



Source: Imagery, USDA NAIP, 2014

- Pump House
- Perimeter Dike Alignment
- Access Route
- Staging Area
- Permanent Wetland Impact
- Temporary Wetland Impact
- Airport Boundary

Drainage Areas

- Pump House No. 1
- Pump House No. 2
- Pump House No. 4
- Pump House No. 6
- Pump House No. 8

0 1,000 2,000 FEET

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AIRPORT DRAINAGE AREAS

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727
Oakland, CA

URS

FIGURE 3-2

e) Surface Runoff

As discussed under **Section 3.IX-a** above, construction of the Proposed Project could result in contaminated runoff. The Port would ensure that the contractor would implement BMPs included in the project-specific SWPPP, and the construction BMPs described in **Section 2.6** of this document, such as covering soil piles, installing silt fences and/or straw wattles, proper storage and handling of hazardous materials, and practicing good housekeeping. As noted above, the contractor would comply with the Section 401 Water Quality Certification/Waste Discharge Requirements, and the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities Order No. 2010-0014-DWQ NPDES No. CAS000002 (General Construction Permit). and project-specific SWPPP. In addition, the Port would implement **Mitigation Measures AQ-1 and HZ-1** through **HZ-3** to reduce the impacts of additional sources (i.e., fugitive dust, hazardous materials, and contaminated soils and/or groundwater) of polluted runoff during construction and filling of wetlands/other waters.

As discussed under **Section 3.IX-c** above, operational activities would remain the same as existing activities, and no increase in polluted runoff would result from project implementation. Because the Proposed Project would not introduce new operational activities, no new sources of pollutants in runoff water would occur.

With implementation of mitigation measures listed above, construction-related impacts from additional sources of polluted runoff would be reduced to less-than-significant levels.

f) Otherwise Substantially Degrade Water Quality

Water quality impacts are described above under **Section 3.IX-a, -c,** and **-e.** During project construction, the Port would ensure that the contactor implement the project specific SWPPP to prevent storm water coming into contact with contaminants. Therefore, the Proposed Project would not affect water quality.

As described in detail under **Section 3.IV – Biological Resources**, the Proposed Project would result in temporary and permanent impacts to wetlands and waters of the U.S. The Port would implement **Mitigation Measure BO-4,** to reduce impacts to wetlands to less-than-significant levels. With implementation of **Mitigation Measure BO-4**, the Proposed Project would have less-than-significant impacts to water quality.

g) Housing within 100-Year Flood Hazard Area

The Proposed Project does not include the construction of housing; therefore, there would be no impacts related to placing housing in a 100-year flood hazard area.

h) Structures within 100-Year Flood Hazard Area

As described in **Section 2.1** of this document, the purpose of the Proposed Project is to improve the dike to provide protection against a 100-year flood event, consistent with FEMA requirements, and to reduce the susceptibility of the perimeter dike from overtopping or deformation resulting from seismic events.

The Proposed Project would result in improvements to the existing dike, and would not place structures in the 100-year flood hazard areas that would impede or redirect flood flows. Therefore, the Proposed Project would not impede flood flows.

i) Risk from Levee or Dam Failure

The primary objective of the Proposed Project is to reduce the risk from potential levee failure associated with the perimeter dike. The perimeter dike that surrounds OAK provides flood protection from the surrounding San Leandro and San Francisco bays. Under the existing conditions, there is the potential for overtopping or breaching of the perimeter dike during a 100-year flood event or during a seismic event, which could lead to flooding of OAK runways, and interruption of Airport operations. If the perimeter dike were breached, flight operations at the South Field could be reduced or suspended for an unspecified period of time, compromising the Airport's ability to provide passenger and cargo services, or to support emergency response efforts, if needed. Such a breach could also result in damage to the active fuel pipelines, resulting in potential injury or loss of life, temporary suspension of Airport operations, release of fuel into wetlands and San Francisco Bay, and/or disruption of fuel supply to OAK and San Francisco International Airport.

The crest structure of the perimeter dike varies from 10.5 to 17.5 feet above msl. The dike portion between Stations 0 and 15, shown on **Figure 2-2**, currently does not have a crest structure, nor does it meet the FEMA requirements for 100-year flood protection. Two other portions along the perimeter dike (approximately between Stations 80 and 90 and Stations 243 and 250) do not have a crest structure. The remaining dike portions have a crest structure.

Sea level rise can contribute to levee failure. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run-up, which will be higher as sea level rises.

The Proposed Project includes raising the crest structure to an elevation of the 100-year TWL, plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise, to reduce potential risk of dike failure. The Proposed Project includes improvements to the dike that would reduce the risk of loss from levee failure by reducing the risk of failure of the perimeter dike in flooding or seismic events. Therefore, impacts associated with increased exposure of people or structures to significant risk or loss, injury, or death would be less than significant.

j) Seiches, Tsunami, or Mudflow

As noted in the Oakland General Plan Community Safety Element, seiches are not historically common occurrences in the San Francisco Bay Area (City of Oakland, 2004). Additionally, damaging tsunamis are not common along the California coast or in San Francisco Bay. Because the Airport is on relatively flat terrain, mudslide is not a hazard for the site.

The Proposed Project would not introduce new operational activities that would increase the number of workers or visitors, nor would it involve construction of structures. Therefore, the Proposed Project would not increase exposure, or risk of loss, injury, or death from inundation by seiche, tsunami, or mudflow, and impacts associated with risk involving inundation by seiche, tsunami, or mudflow would be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING				
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) Physically Divide an Established Community

The Proposed Project would improve the existing perimeter dike to protect the Airport from a 100-year flood, and to enhance the perimeter dike's ability to withstand earthquake events. The dike forms the boundary between the Airport and San Francisco Bay. The proposed construction activities would take place on and in the immediate vicinity of the existing dike, primarily on Airport property, with a small portion in the City of San Leandro. The proposed staging areas would also be on Airport property. The nearest established communities are the City of Alameda, City of Oakland, and City of San Leandro, which are separated from the project area by Airport property and Harbor Bay Parkway, Doolittle Drive (State Route 61), and Davis Street (State Route 112). Therefore, the Proposed Project would not physically divide an established community, and no impact is anticipated.

b) Land Use Plan, Policy, or Regulation

Local Plans

The Airport is located predominantly in the City of Oakland—Alameda County, California. With the exception of a 2,500-linear foot section of the perimeter dike at the easternmost end, the project area is on property owned by the Airport. The area of the Proposed Project outside the Airport property is owned by and located in the City of San Leandro. Applicable land use policies and zoning for the project area are described below. Because the project area is not located in the City of Alameda, this discussion does not include City of Alameda land use policies.

The City of Oakland Charter grants land use jurisdiction to the Port for land within the Airport, Seaport, Commercial Real Estate, and the Oakland Airport Business Park land use designations. OAK is in Port jurisdiction, and is zoned as Transportation. The Airport is included in the General Industrial/ Transportation designation of the City of Oakland General Plan (City of Oakland, 1998; City of Oakland, 2013a). The intent of this land use designation is to recognize, preserve, and enhance areas of the city for a wide variety of uses that may have the potential to create offsite impacts, such as noise, light/glare, truck traffic, and odor. The importance of the Airport is also recognized in the General Plan, which

includes OAK in the Seaport and Airport/Gateway Showcase District. The Airport is primarily zoned as General Industrial (IG) district (City of Oakland, 2013b; City of Oakland, 2014b). The purpose of this district is to create, preserve, and enhance areas of the city that are appropriate for a wide variety of uses, including transportation facilities, that may have the potential to generate offsite impacts such as noise, light/glare, odor, and traffic. A portion of the Airport is also zoned Heavy Industrial (M-40). The purpose of this district is to create, preserve, and enhance areas containing manufacturing, industrial, or related establishments that are potentially incompatible with most other establishments, and are typically appropriate to areas that are distant from residential areas, and that have extensive rail or shipping facilities.

The project area in the City of San Leandro is designated as Open Space/Recreation in the San Leandro General Plan, and is zoned as Industrial General District (City of San Leandro, 2002; City of San Leandro, 2001).

OAK is included in Alameda County's Airport Land Use Policy Plan (ALUPP), which was adopted by the Alameda County Airport Land Use Commission to promote compatibility between the public use airports in Alameda County and the land uses that surround them (Alameda County ALUC, 2010). Jurisdictions with planning authority in areas covered by the ALUPP are required to ensure that their planning documents and zoning ordinances are consistent with the ALUPP.

The Proposed Project would allow for the continuation of existing operations at the Airport by constructing improvements to the existing perimeter dike, allowing it to meet the requirements for 100-year flood protection, and reducing its vulnerability to seismically induced deformation during an earthquake. In addition, the Proposed Project would not generate substantial off-airport land use impacts, or otherwise influence land use patterns or development in the vicinity of OAK. The continuation of existing uses at the Airport would be consistent with the preferred land use designations and existing zoning at the Airport. Therefore, the Proposed Project would not conflict with applicable local land use plans and regulations, including the City of Oakland General Plan and Zoning Ordinance, and the Alameda County ALUPP, and would result in no impacts to applicable local land use plans, policies, and regulations.

Local Coastal Program

The BCDC is the agency responsible for administering the provisions of the Federal Coastal Zone Management Act of 1972 under the State of California's approved coastal zone management program. BCDC's coastal management program is based on the provisions and policies of the McAteer-Petris Act, the Suisun Marsh Preservation Act of 1974, the San Francisco Bay Plan (Bay Plan) (BCDC, 2008), the Suisun Marsh Protection Plan, and the BCDC's administrative regulations.

The BCDC's Bay Plan (Bay Plan) was originally adopted in 1969, and has been periodically updated to guide future uses of San Francisco Bay and the shoreline (BCDC, 2008). The Bay Plan includes policies that address San Francisco Bay resources, uses of the shoreline, and filling of San Francisco Bay, as well as maps that apply the Bay Plan policies to current uses of the San Francisco Bay shoreline. BCDC requires consistency with Bay Plan policies for the issuance of BCDC permits for filling, dredging, and shoreline development. On October 6, 2011, BCDC adopted the amended the Bay Plan, adding new policies to address climate change.

BCDC's jurisdiction covers all tidal areas in San Francisco Bay, including a shoreline band extending inland 100 feet from the mean high water line, as shown on **Figure 3-3** (in **Section 3.XV – Recreation**). The length of the San Francisco Bay shoreline within OAK's boundary is approximately 4.5 miles. In this area, BCDC has permitting responsibility for all bay filling, dredging, and related shoreline development.

The Bay Trail, which provides public access along the shoreline, extends along Airport Drive, Doolittle Drive, and Harbor Bay Parkway in the project vicinity. For safety and security reasons, public access is not permitted through the BCDC shoreline jurisdictional area on Airport property.

The Bay Plan designates OAK as an Airport Priority Use Area; therefore, the Proposed Project is consistent with standards for the use of the shoreline. The Proposed Project is in the Central Bay Plan Map (Map 5) of the Bay Plan. Applicable Bay Plan policies for the Airport are:

- Further expansion into San Francisco Bay is permitted only if a clear need is shown by a regional airport system study;
- Runway approach and takeoff areas are to be kept clear of tall structures and incompatible uses; and
- Bay Trail is to be completed along an inland route.

Other applicable Bay Plan policies, which pertain to shoreline protection, include:

(1) New shoreline protection projects and the maintenance or reconstruction of existing projects and uses should be authorized if:

   (a) The project is necessary to provide flood or erosion protection for:
      (i) Existing development, use, or infrastructure; or
      (ii) Proposed development, use, or infrastructure that is consistent with other Bay Plan policies;
   (b) The type of the protective structure is appropriate for the project site, the uses to be protected, and the erosion and flooding conditions at the site;
   (c) The project is properly engineered to provide erosion control and flood protection for the expected life of the project, based on a 100-year flood event that takes future sea-level rise into account;
   (d) The project is properly designed and constructed to prevent significant impediments to physical and visual public access; and
   (e) The protection is integrated with current or planned adjacent shoreline protection measures.

(2) Riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revetment should be placed according to accepted engineering practice, and be free of extraneous material, such as debris and reinforcing steel. Generally, only engineered quarrystone or concrete pieces that have been specially cast, are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.

The Proposed Project would enhance the level of safety at the Airport through improvements to the perimeter dike, which would allow it to meet the requirements for 100-year flood protection, and reduce the vulnerability of the dike to seismically induced deformation during an earthquake. Most of the

proposed improvements would occur in areas subject to BCDC's jurisdiction, as shown on **Figures 2-4** through **2-8**.

As described in **Section 3.XV – Recreation**, potential impacts to the public access area at the western end of the perimeter dike would be temporary, and the recreational area would be restored to pre-project conditions after construction. To reduce potential impacts ~~of the temporary closure of~~to the Bay Trail at the eastern end of the perimeter dike, the Port would implement **Mitigation Measure RE-1, Bay Trail Detour Plan and Access**, identified in **Section 3.XV**, **Recreation,** to provide an alternate Bay Trail route during the ~~approximately 2-week~~temporary construction closure of the trail, or to have a flag person on both ends of the Bill Lockyer Bay Trail Bridge to control public access and construction vehicles that would cross the trail. With the implementation of **Mitigation Measure RE-1**, potential impacts to users of the Bay Trail would be less than significant with mitigation.

As described in **Section 3.I – Aesthetics**, the Proposed Project would not result in significant changes in appearance along the shoreline. Raising the crest structure and dike crest as part of the proposed improvements would increase the elevation of the dike by up to 4 feet, and would not result in distinguishable changes from the surrounding area. Armoring the crest structure could entail placement of earth fill and/or placement of riprap on the outboard side of the dike. The riprap would have an appearance similar to the existing concrete rubble berm. As such, the Proposed Project would not result in conflicts with the appearance, design, and scenic view policies of the Bay Plan.

The proposed improvements would include installation of riprap materials at a few locations on the outboard side of the perimeter dike, where the crest structure is lower than the design elevation or where the existing materials require repair. The riprap material would be made of natural rock imported to the project site, and would be similar in appearance to the existing riprap. As possible, the crest structure would be raised to avoid placement of riprap material below the high tide line (below 7.44 feet) (URS, 2015).

The proposed improvements would also include stabilizing a portion of the inboard slope of the perimeter dike by installing a stability berm or a shear panel. Construction of a stability berm would be at locations where permanent impacts to wetlands adjacent to the dike toe would be minimized (between Stations 20 and 38, and between Stations 120 and 188). As described in Chapter 2.0, Project Description, under Improvements of Inboard Slope of the Dike, in locations where the installation of a stability berm could result in significant permanent impacts to wetlands (between Stations 54 and 75), shear panels would be installed instead.

The Proposed Project would not conflict with Bay Plan resource policies, including water quality and wildlife policies. No substantial adverse impacts on water quality would result from construction or operations of the Proposed Project, and the project would not introduce new activities or pollutants to San Francisco Bay. The Proposed Project, including San Francisco Bay fill associated with construction activities, is consistent with the policies in the Bay Plan.

The Port will obtain a permit approval from BCDC for the Proposed Project. At the completion of the construction activities, access to the Bay Trail at both sides of the perimeter dike would be restored. In

addition, the benches in the recreational area on the western end of the perimeter dike would be reinstalled.

Therefore, the potential conflict of the Proposed Project with applicable local coastal program policies and regulations would be less than significant with implementation of the mitigation measure listed above.

c) Conservation Plans

No habitat conservation plans or natural community conservation plans have been adopted for the project area in the vicinity of the Proposed Project. Therefore, no impacts are anticipated.

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

a) Available Known Mineral Resource

There are no known important mineral deposits or mining activities for oil, coal, natural gas, sand, gravel, or crushed stone in the Airport and surrounding areas. The Proposed Project would be developed on the Airport property, with a small portion in the City of San Leandro, and would not impact mineral resources that are important to the region or state residents.

b) Locally Important Mineral Resource Recovery Site

The project site is in a developed urban area that has no known locally important mineral resources. Construction of the Proposed Project would use common building materials such as riprap, aggregate, and concrete. These materials are considered widely available in the San Francisco Bay Area. Therefore, the Proposed Project would have no impact on locally important mineral resources in the project site.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE					
Would the project:					
a)	Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b)	Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
f)	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Regulatory Setting

Federal

The Noise Control Act (42 USC Chapter 4901, et seq.) directs the U.S. EPA to develop noise level guidelines that would protect the population from the adverse effects of environmental noise. The U.S. EPA published a guideline (U.S. EPA, 1974) recommending that the acceptable noise level limits affecting residential land use be 55 A-weighted decibels (dBA) day-night average noise level (L_{dn}) for outdoors, and 45 dBA L_{dn} for indoors. U.S. EPA is careful to stress that, because these recommendations contain a factor of safety, and do not consider technical or economic feasibility issues, they should therefore not be construed as standards or regulations.

The Federal Transit Administration (FTA) has published guidance for assessment of noise and vibration impacts for transit projects (FTA, 2006). This document is an accepted industry standard for analyzing impacts associated with all types of projects during construction activities. FTA has developed three "sensitive" land use categories to evaluate compatibility of predicted noise levels:

- Category 1 includes land where quiet is an essential element, such as outdoor amphitheaters;
- Category 2 includes residences where people sleep; and
- Category 3 includes institutional buildings where quiet is important, such as schools and libraries.

Categories 1 and 3 use the hourly equivalent sound level (L_{eq}), and Category 2 uses L_{dn}. Such criteria recognize the heightened community annoyance caused by late-night or early-morning operations, and respond to the varying sensitivities of communities to projects under different ambient noise conditions.

For residential land uses, the daytime noise standard during construction is 90 dBA L_{eq} over a 1-hour period; and for industrial and commercial land uses is 100 dBA L_{eq} over a 1-hour period. For potential vibration impacts, the FTA standard for annoyance vibration level (L_v) ranges from 75 to 83 vibration decibels (VdB) (depending on frequency of vibration event or duration) for "Category 3: institutional land uses with primarily daytime use" (FTA, 2006). The abbreviation "VdB" is used in this document for vibration decibels, to reduce the potential for confusion with sound decibels.

Local Jurisdiction

Oakland

Oakland's Municipal Code (Section 8.18.020) (City of Oakland, 2013c) states that failure to comply with the following measures shall constitute a nuisance:

A. All construction equipment powered by internal combustion engines shall be properly muffled and maintained;
B. Unnecessary idling of internal combustion engines is prohibited;
C. All stationary noise-generating construction equipment such as tree grinders and air compressors are to be located as far as is practical from existing residences;
D. Quiet construction equipment, particularly air compressors, is to be selected whenever possible; and
E. Use of pile drivers and jackhammers shall be prohibited on Sundays and holidays, except for emergencies and as approved in advance by the Building Official.

Table 3-5 shows maximum allowable noise level standards from Chapter 17.120.050 of the Oakland Planning Code (City of Oakland, 2013c) for temporary construction or demolition activities.

Alameda

The City of Alameda only allows construction activity between the hours of 7:00 a.m. and 7:00 p.m. on weekdays, and between 8:00 a.m. and 5:00 p.m. on Saturdays (City of Alameda, 2013). Construction noise within this allowable timeframe is exempt from the noise standards.

San Leandro

The City of San Leandro limits construction noise to between the hours of 7:00 a.m. and 7:00 p.m. on weekdays, and between 8:00 a.m. and 7:00 p.m. on Sunday and Saturday (City of San Leandro, 2013). No such construction is permitted on federal holidays. Construction noise is exempt from exterior noise standards within the provided hours.

Table 3-5
Oakland Maximum Allowable Receiving Noise Levels Standards (dBA)

	Daily 7:00 a.m. to 7:00 p.m.
Short-Term Operation (Short-term construction or demolition operation (less than 10 days)	
Residential	80
Commercial, Industrial	85
Long-Term Operation (any repetitively scheduled and relatively long-term construction or demolition operation (10 days or more)	
Residential	65
Commercial, Industrial	70

Source: City of Oakland, 2013c.

Notes:

dBA = A-weighted decibel

Receptors

The Proposed Project is primarily surrounded by commercial land uses outside of the perimeter fence of OAK For the purposes of this noise analysis, users of the Bay Trail at both ends of the perimeter dike (i.e., the Bay Trail segment adjoining Harbor Parkway in the City of Alameda and the Bay Trail segment adjoining the Oyster Bay Regional Shoreline in San Leandro and the Metropolitan Golf Links in Oakland) and commercial uses along Harbor Parkway in the City of Alameda were considered to be the closest noise-sensitive areas to construction activities. Commercial properties are approximately 400 feet from construction activities at Station 250 in Alameda. Noise levels were calculated at these representative sensitive receptor areas because they would be considered the closest to the construction activities. If no significant impacts were anticipated at these sites, then sensitive receptors located farther from construction would not be significantly impacted.

a) Noise Levels in Excess of Established Standards

Noise from the Proposed Project would primarily be generated from construction activities. Upon completion of the dike improvements, there would be no ongoing noise generated by the project, but there would be sporadic maintenance of the gravel road along the project area.

Receptors at the commercial properties would experience noise generated from all four of the proposed components: proposed seismic improvements, crest structure improvements, stability berm construction, and raising the dike structure. It is anticipated that construction activities from remediation of seismic deformations would generate the greatest amount of noise. The FTA general method for assessing noise impacts assumes the two loudest pieces of equipment used for a construction process or activity may be operating simultaneously. Seismic improvements would involve the displacement of soil as stones are vibrated or compacted into columns. This type of equipment is sometimes known as a vibroflot, which—

for purposes of this analysis—is assumed to generate noise levels of 76 dBA at a distance of 50 feet (based on reported noise data for similar vibro displacement machines [Kempfert and Raithel, 2002]) and vibration levels comparable to that from a vibratory pile driver.

This analysis predicts noise from project improvements using a vibroflot rig and crane, the latter of which typically generates noise levels of 81 dBA L_{max}, measured at 50 feet from operating equipment (FHWA, 2006). The Cities of Alameda and San Leandro (jurisdictions in which sensitive receptors along the Bay Trail at the eastern and western ends of the Proposed Project are located) exempt construction noise from their respective exterior noise standards during allowable construction activity hours. Due to this lack of applicable construction noise limit, the FTA commercial land use noise standard of 100 dBA was used for assessment of impact at the Bay Trail locations and City of Alameda commercial land uses. For the Metropolitan Golf Links, a location within the City of Oakland, the commercial long-term daily construction noise limit of 70 dBA was used for impact assessment purposes; this assumes that vibroflot activity as close as 200 feet from the Metropolitan Golf Links might occur for a period of not more than 10 days.

Noise levels were calculated at the nearest sensitive receptors, which are the aforementioned Bay Trail areas near the eastern and western ends of the Proposed Project and commercial properties northeast of the Proposed Project along Harbor Bay Parkway (Peet's Coffee & Tea Roaster). It is anticipated that noise levels would be at approximately 64 dBA at the City of Alameda commercial land uses, which is well below the FTA standard of 100 dBA (**Table 3-6**). At the Bay Trail segment locations or Metropolitan Golf Links, it is expected construction noise would be 70 dBA, the allowable limit per the City of Oakland. Impacts are therefore anticipated to be less than significant for construction activities with respect to these nearby land uses.

Table 3-6
Predicted Construction Noise Levels at Commercial Receptors along Harbor Parkway

Sensitive Receptor	Distance to Project Site (Feet)	Equipment Used	Predicted Construction Noise Levels[1] (dBA)	Significance Threshold (dBA)	Significant
Commercial Property along Harbor Bay Parkway (Peet's Coffee) or Bay Trail	400	Vibratory Pile Driver Mobile Crane	64	100	No
Metropolitan Golf Links	200	Vibratory Pile Driver Mobile Crane >10 days	70	70	No

Sources: FTA, 2006.

Notes:

[1] Assumes loudest two pieces of equipment operating simultaneously.

dBA = A-weighted decibel

b) Excessive Groundborne Vibration

Construction of the seismic improvements would require installation of stone columns using a vibroflot technique (or a similar process). This type of construction, for purposes of this analysis, is assumed to generate a significant amount of vibration comparable in magnitude to that of a vibratory pile driver. Research on vibro-compaction (Hamidi et al., 2011) suggests that the peak particle velocity for a 96 kilowatt vibroflot is comparable to the average of upper and lower range peak particle velocity values indicated for vibratory pile driving in FTA guidance documentation (FTA, 2006). **Table 3-7** shows the vibration velocity levels in decibels (L_v) associated with use of this special equipment for implementation of seismic improvements along the dike. The FTA guidelines were used for analyzing vibration impacts (with respect to human annoyance), because either no vibration standards are provided by the relevant local jurisdiction of the potentially affected receiver (as is the case for the City of San Leandro and the City of Alameda), or because temporary construction activity is exempted from otherwise applicable standards (City of Oakland Planning Code, Chapter 17.120.060).

Table 3-7
Construction Equipment Vibration Levels at Nearby Sensitive Receptors

Sensitive Receptor	Distance between Vibroflot Pile-driving and Receptor (feet)	Approximate L_v (VdB)[1] at Receptor
Commercial Property along Harbor Bay Parkway (Peet's Coffee) or Bay Trail	400	65
Metropolitan Golf Links	200	74

Source: FTA, 2006; Hamidi et al., 2011

Notes:

Lv = annoyance vibration level
VdB = vibration velocity decibels

Using an FTA algorithm, the reference vibration level for vibroflot-type pile driving at a distance of 25 feet is used to predict L_v at the nearest Bay Trail locations and nearest commercial land use in the City of Alameda. As shown in **Table 3-7,** predicted vibration levels would be below the acceptable FTA vibration standard threshold of 75 VdB L_v for "frequent events" (i.e., more than 70 vibration events from the same source per day, for a Category 3 land use). Therefore, construction vibration impacts would be less than significant.

c) Permanent Increase in Ambient Noise

The Proposed Project would not result in a permanent increase in ambient noise. The project construction is anticipated to be completed within 28 months. Operational activities would remain the same as existing activities, so there would be no additional impacts from operational noise compared to existing conditions. Therefore, there would be no impacts.

d) Temporary Ambient Noise

Based on the analysis provided under **Section 3.XII-a**, the Proposed Project would be within the applicable maximum exterior noise levels of the City of Oakland and below the FTA guidance levels. Additionally, based on the predicted construction noise levels of 64 dBA and 70 dBA at 400 feet and

200 feet, respectively, the Proposed Project would not be expected to cause a substantial temporary or periodic increase in ambient noise levels at the nearby receiver locations. Measured sound levels at Mulford Point, a San Leandro bay-front location less than a mile from the eastern edge of the Proposed Project, are already as high as 72 dBA (City of San Leandro, 2014). Noise levels resulting from the Proposed Project would be naturally attenuated with distance to resultant levels that are very unlikely to have a cumulative effect. Therefore, impacts on temporary ambient noise would be less than significant.

e) Excessive Noise Levels Within Airport Land Use Plan

The Proposed Project is located in the property of OAK. Proposed Project construction would be conducted in phases, which would be short term and temporary, and is not anticipated to result in noise levels that exceed those of applicable local noise regulations and guidelines or the existing ambient noise that represents acoustical contribution from airplane operations (takeoffs, landings, taxiing, etc.) at OAK and nearby urban activities and surface transportation. Operational activities would remain the same as existing activities, so there would be no additional impacts from operational noise compared to existing conditions. Impacts to people residing and working in the area would be less than significant.

f) Excessive Noise Within Vicinity of a Private Airstrip

The Proposed Project is located in the property of OAK, which is not a private airport. Therefore, there would be no excessive noise in the vicinity of a private airstrip, and no impact.

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

a) Population Growth

The Proposed Project would not result in new facilities, industries, or additional businesses. The Proposed Project also would not increase operations, or the number of passengers or aircraft, at the Airport. During construction, employment in the Airport and surrounding cities (Alameda and Oakland) would temporarily increase, but would be minor. The work force likely would be local, and would not result in a need for additional housing. Therefore, the Proposed Project would not directly or indirectly induce population growth.

b) Housing

The Proposed Project would improve the existing perimeter dike at the Airport, and would not result in the displacement of existing housing, or require the construction of replacement housing elsewhere.

c) Displacement of People

The proposed improvements to the perimeter dike would not result in the displacement of people or require the construction of replacement housing elsewhere.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☒
· Fire protection?	☐	☐	☐	☒
· Police protection?	☐	☐	☐	☒
· Schools?	☐	☐	☐	☒
· Parks?	☐	☐	☒	☐
· Other public facilities?	☐	☐	☐	☒

a) Impacts to Public Services

The Airport is served by City of Oakland police and fire protection services. Outside the Airport property, public services, including police and fire protection, schools, and parks, are provided by local jurisdictions (cities of Oakland, Alameda, and San Leandro, and Alameda County). The provision of these services is described below. No other public facilities located in the project vicinity, such as the City of San Leandro's water pollution control plant, would be affected by the Proposed Project.

Fire and Police Protection

The Oakland Fire Department and the Oakland Police Department serve OAK. Oakland Fire Station 22 is on Airport property, and provides Airport rescue and firefighting to respond to aircraft incidents and accidents. Oakland also has mutual-response agreements for fire protection with adjacent jurisdictions, including Alameda and Contra Costa counties, and the cities of Alameda and San Leandro (City of Oakland, 2004). The Airport is in Oakland Police District 5 and is served by Police Beat 31X (City of Oakland, 2014c). The Port also provides security services to the Airport (Port, 2006).

The Proposed Project would improve the existing perimeter dike to protect the Airport from a 100-year flood, and improve the ability of the perimeter dike to withstand earthquake events. These improvements would not change existing operations at the Airport, and the number of passengers or aircraft operations at the Airport would not change as a result of the Proposed Project. In addition, because the Proposed Project would protect against a 100-year flood event and would seismically retrofit the perimeter dike, it would reduce the potential demand for emergency response in the event of a flood or an earthquake. Therefore, the Proposed Project would not increase the demand for fire/emergency response and law enforcement services, and would have no impacts on police protection, fire, and emergency services.

Schools

As discussed in **Section 3.XIII – Population and Housing**, the Proposed Project would not result in population growth, and it would not increase the demand for school facilities. Therefore, the Proposed Project would have no impact on schools.

Parks

As discussed in **Section 3.XV – Recreation** of this document, the Proposed Project would not cause an increase in Airport operations or the number of passengers at the Airport, and therefore would not increase patronage of the parks and recreational areas near the Airport. The public access area on the western end of the perimeter dike would be temporarily closed during construction of the Proposed Project, and would be restored to pre-project conditions after construction. Several other park facilities are available to the public in the project vicinity, and the temporary closure of this recreation area would not require the construction of park facilities elsewhere. Therefore, because the potential impacts to park facilities would be temporary and the facilities would be restored post construction, the Proposed Project would result in less-than-significant impacts to existing parks.

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

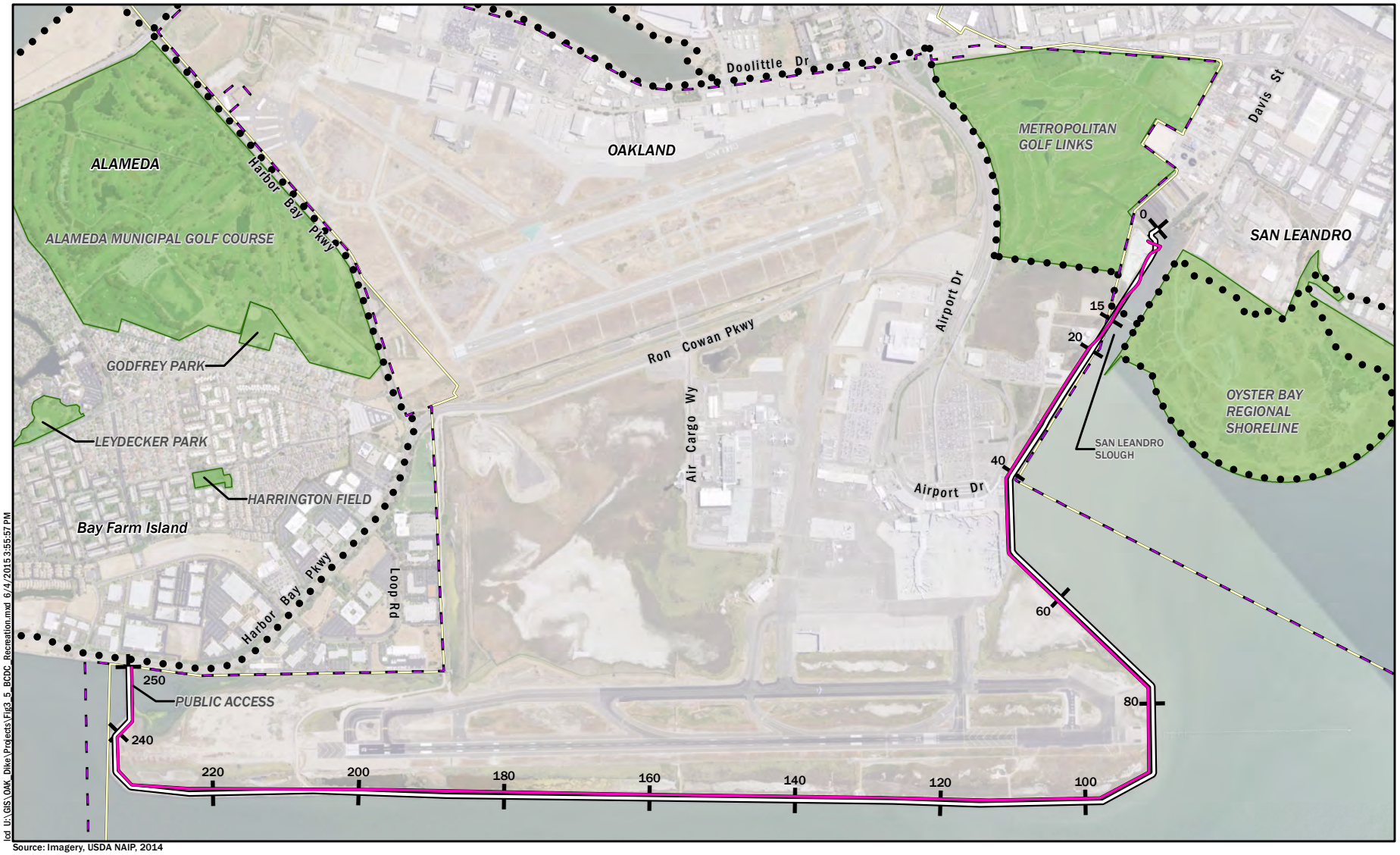
As shown on **Figures 3-3** and **3-4**, there is a public access area in the Proposed Project area at the western end of the perimeter dike; the project area also intersects the Bay Trail at the eastern end of the perimeter dike. There are also several parks and recreational facilities in the vicinity of the Airport.

The Bay Trail, an approximately 500-mile-long trail around San Francisco Bay, extends along Airport Drive, Doolittle Drive, and Harbor Bay Parkway in the Airport vicinity as an off-street trail, on-street bike lane, and on-street unimproved route (i.e., no designated bike lane). At the western end of the perimeter dike, an unpaved trail extends from the Bay Trail on Bay Farm Island along the dike. Several benches are located along the trail, which ends at a fence that separates the public access area from the Airport facilities. Toward the eastern end of the project area, the Bay Trail extends onto Airport property along Airport Drive, extends southeast along Metropolitan Golf Links, then crosses San Leandro Slough via the Bill Lockyer Bay Trail Bridge to Oyster Bay Regional Shoreline.

Other park and recreation facilities in the vicinity include Harrington Park (softball field and picnic areas), Godfrey Park (baseball field, soccer field, play lots, volleyball, and basketball courts), and Alameda Municipal Golf Course on Bay Farm Island to the north of the project area; and Metropolitan Golf Links and Oyster Bay Regional Shoreline to the east and south of the project area. Oyster Bay Regional Shoreline provides shoreline trail access, wildlife observation, non-motorized small boat access, and picnic areas.

a) Physical Deterioration of Recreational Resources

The Proposed Project would not result in an increase in population as described under **Section 3.XIII – Population and Housing**, and therefore would not increase the use of existing recreational facilities in the project vicinity. Additionally, the temporary closure of the public access on the western end of the dike would not result in increased use of other parks in the area in such a way that substantial physical deterioration of the facilities would occur. Therefore, the Proposed Project would not result in the physical deterioration of park facilities as a result of increased use of the facilities.



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Source: Imagery, USDA NAIP, 2014

- BCDC Jurisdiction
- Perimeter Dike Alignment
- San Francisco Bay Trail
- Airport Boundary
- City Limit

0 1,000 2,000 FEET

BCDC JURISDICTION & RECREATIONAL RESOURCES

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 3-3

View of public access area looking southwest towards the San Francisco Bay.

View of benches (background).

View of benches.

View of public access area looking northeast towards to the Bay Trail.

06/11/15 vsa T:\Oakland Dike\Figs_PMND_2014_02.indd

PUBLIC ACCESS AREA AT WEST END OF PERIMETER DIKE

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 3-4

b) Construction or Expansion of Recreational Resources

The Proposed Project would enhance the level of safety at the Airport through improvements to the perimeter dike, which would allow it to meet the requirements for 100-year flood protection, and would reduce the vulnerability of the dike to seismically induced deformation during an earthquake. The Proposed Project would not include the construction or expansion of recreational facilities; however, it would require the temporary closure of the public access at the western end of the dike for up to 10 weeks. The public access area would be restored to pre-project conditions, and the benches and trash receptacles currently located on that portion of the dike would be replaced after project construction. The potential impacts from the restoration of the existing public access area after project construction are analyzed throughout this document, and would not result in additional adverse physical effects on the environment.

Where the Proposed Project improvements intersect the eastern end of the dike, construction activities and construction trucks and equipment—which would cross the Bay Trail during approximately 2 weeks of construction of the perimeter dike in the immediate area—could be in conflict with recreational users of the Bay Trail.

Construction activities and shared use of the Bay Trail by recreational users and construction vehicles could result in significant recreational impacts. The Port would implement **Mitigation Measure RE-1, Bay Trail Detour Plan and Access**, detailed below, to provide an alternate route during closure of the Bay Trail segment that intersects the project site, or have a flag person on both ends of the Bill Lockyer Bay Trail Bridge to control public access and vehicle traffic using the trail, and ~~would~~ maintain access along the Bay Trail at the end of each day during project construction. With implementation of **Mitigation Measure RE-1**, the Proposed Project's impacts to recreation would be less than significant.

Therefore, because the potential impacts to recreation facilities would be temporary, recreation facilities would be restored to pre-project conditions after construction; conflicts on the Bay Trail would be prevented; and access on the Bay Trail would be maintained during construction via an alternate trail route, the Proposed Project's impacts to existing park and recreation facilities would be less than significant with mitigation.

Recreation Mitigation Measure

The following mitigation measure applies to Bay Trail impacts identified in **Section 3.XV-b**.

Mitigation Measure RE-1, Bay Trail Detour Plan and Access

In the event the Bay Trail would need to be closed during construction, the Port, in coordination with BCDC, the cities of San Leandro and Oakland, and the Association of Bay Area Governments, ~~the Port~~ shall identify a temporary alternate route for the Bay Trail that will connect the Bay Trail to the south of the closure at Bill Lockyer Bay Trail Bridge with the Bay Trail to the north of the bridge, outside of the construction area for the project. The Bay Trail alternate route ~~shall extend from Oyster Bay Regional Shoreline Park to Doolittle Drive~~ may include Polvorosa Avenue, William Street, Neptune Drive, and Doolittle Drive. ~~The temporary route shall generally follow Davis Street (heading north) and Doolittle Drive (heading west). These streets are designated as scenic routes in the City of San Leandro General~~

~~Plan. In addition, the City of San Leandro in its General Plan identifies Doolittle Drive as a bikeway.~~ The alternate route shall be developed to protect the safety of trail users from potential conflicts, including with the construction access routes for the project. Temporary signage shall be installed to direct trail users along the alternate route. In the event that construction activities would only require crossing the Bay Trail and no need for the trail closure, a flag person would be stationed at each end of the Bill Lockyer Bay Trail Bridge to control public access and construction traffic crossing the trail.

Access to the Bay Trail shall be maintained each day after construction hours.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

The project area is served regionally by I-880 and I-580, and locally by Hegenberger Road, 98th Avenue, Doolittle Drive (State Route 61), Airport Drive, Ron Cowan Parkway, Davis Street, Harbor Bay Parkway, and High Street, connecting the Airport to the cities of Alameda, Oakland, and San Leandro.

Regional rail service is provided by Amtrak and Bay Area Rapid Transit (BART), which both offer connections to the Airport via the Coliseum/Oakland Airport Station. Amtrak is a national rail service provider with two stations in the nearby vicinity: Coliseum/Oakland Airport Station, and Jack London Square Station. The two stations combined offer daily service that connects OAK to three main routes: San Jose to Sacramento, Los Angeles to Seattle, and Oakland to Chicago. BART is a regional rail service with a station at the Coliseum/Oakland Airport Station that connects transit riders to the East Bay, San Francisco, and northern San Mateo County.

Transit riders can directly connect from the Coliseum/Oakland Airport Station to OAK's Terminals 1 and 2 using the Oakland Airport Connector, an automated light steel guideway system (BART, 2015). Fixed-route bus service (#73 Local and #805 All Nighter) operated by the Alameda-Contra Costa Transit District (AC Transit) also serves the Airport (BART, 2014; Port, 2014a). Additionally, AC Transit operates the #21

Local, a bus that provides direct service between OAK and Oakland and Alameda, and also provides indirect bus connections that serve the counties of Alameda and Contra Costa, as well as San Francisco and the Peninsula.

a) Effectiveness of the Performance of the Circulation System

Roadways

The Proposed Project would enhance the level of safety at the Airport through improvements to the perimeter dike, which would allow it to meet the requirements for 100-year flood protection, and reduce the vulnerability of the dike to seismically induced deformation during an earthquake. Staging and stockpiling associated with the Proposed Project would occur on the existing dike; at the Port's MMS south of Ron Cowan Parkway on the air operations area of OAK; or at the construction staging area near the South Field Tank Farm at the end of Sally Ride Way (shown on **Figure 2-9**).

All construction activities, construction staging, and vehicle parking associated with the Proposed Project would be on existing Airport property, with a small portion in the City of San Leandro, and outside the right-of-way of public roadways. Therefore, no travel-lane closures or roadway detours are anticipated.

During the construction period—2016 to 2018—a minor increase in roadway congestion could occur temporarily at various locations around the Airport as a result of construction-related vehicle traffic, and workers traveling to and from the project site. These construction trips would occur on the existing roadway network in the project vicinity, including I-880, I-580, Hegenberger Road, 98th Avenue, Doolittle Drive (State Route 61), Airport Drive, Ron Cowan Parkway, Davis Street, Harbor Bay Parkway, and High Street. **Table 3-8** presents annual average daily traffic and peak-hour traffic in 2012 for freeways serving the project site and Airport Drive. During the construction period—approximately 28 months—as many as six crews with a maximum of 34 workers total would work in a single day. These workers would result in a limited number of additional commute trips. In addition, construction activities would result in a limited number of construction vehicles per day. The addition of worker and construction vehicle trips to the roadway network serving the project site would be neither substantial relative to the existing traffic volumes, nor disrupt traffic flows on these roadways. In addition, the Proposed Project would be constructed on existing Airport property, with a small portion in the City of San Leandro, and no changes to the roadway network would be required.

The Proposed Project would not result in increased Airport operations or an increased number of passengers or aircraft operations at the Airport. Therefore, impacts to roadways resulting from the construction and operation of the Proposed Project would be less than significant.

Public Transit

The project vicinity is well served by existing regional and local transit services operated by AC Transit, Amtrak, and BART, which directly or indirectly serve OAK. The additional trips from construction workers generated as a result of the Proposed Project would be minor, and there is sufficient capacity in the existing transit systems to accommodate the temporary increase in transit trips that would result from the Proposed Project.

Table 3-8
Annual Average Daily Traffic and Peak Hour Traffic (2012)
on Freeways/Roadways Adjacent to Oakland International Airport

Freeway/Roadway	Annual Average Daily Traffic[1]	Peak-Hour Traffic
I-880, east of Route 112 and Davis Street	202,000	13,900
I-880, east of 98th Avenue Interchange	192,000	13,200
I-880, east of Hegenberger Road	206,000	13,800
I-880, east of 66th Avenue	205,000	14,100
I-580, north of Estudillo Avenue Interchange	149,000	13,600
I-580, north of Edwards Avenue	176,000	16,000
I-580, north of High Street	149,000	13,000

Source: Caltrans, 2012

Notes:

1 Annual Average Daily Traffic is defined as the total volume of vehicle traffic on a highway or road for a given year, divided by 365 days.

I-580 = Interstate 580
I-880 = Interstate 880

The minor increase in construction-related vehicles along roadways shared with AC Transit bus routes could potentially slow bus movements. However, this temporary impact on roadway traffic volumes and AC Transit bus service would have a less-than-significant impact on the overall public transit network serving the Airport, because construction would be temporary, and the number of construction-related vehicles would not be substantial compared to the existing traffic volumes.

Bicycle and Pedestrian Facilities

Existing Class 1 bike paths and Class 2 bike lanes link OAK's Terminal 1 to the cities of Oakland, Alameda, and San Leandro, and the San Francisco Bay Trail. Within the Airport, bicycles are allowed to operate on the main airport roads (Doolittle Drive, Airport Drive, Ron Cowan Parkway, and John Glen Drive) to Terminal 1, and must be walked along the terminal curbside to Terminal 2. There are designated bicycle parking areas at each terminal (Port, 2014b).

Project construction and implementation of the Proposed Project would occur primarily on Airport property, with a small portion in the City of San Leandro. All construction staging areas would be on the Airport property. Pedestrian and bicycle-related facilities are on or adjacent to local roadways that may be shared with construction-related vehicles and workers; however, construction and operation of the Proposed Project would not obstruct or require the detour or relocation of such facilities, except for where the project area intersects the Bay Trail at the eastern end of the perimeter dike. At this location, construction trucks and equipment, which would cross the Bay Trail during approximately 2 weeks of construction of the perimeter dike in the immediate area, could result in conflicts with non-motorized travel.

The Port would implement **Mitigation Measure RE-1, Bay Trail Detour Plan and Access**, identified in **Section 3.XV**, **Recreation,** to provide an alternate Bay Trail route during the approximately 2-week construction closure of the trail. This temporary alternate route would maintain access along the Bay Trail, connecting Oyster Bay Regional Shoreline to the south with the Bay Trail to the north of the Bill Lockyer Bay Trail Bridge, and would provide temporary signage directing trail users along the alternate route. With the implementation of **Mitigation Measure RE-1**, potential impacts to users of the Bay Trail and potential impacts to bicycle and pedestrian facilities would be less than significant.

b) Level of Service Standards

Construction-related vehicles would result in temporary and intermittent project construction effects on traffic volumes to roads and highways in the project vicinity. These roadways are expected to include I-880, I-580, Hegenberger Road, 98th Avenue, Doolittle Drive (State Route 61), Airport Drive, Ron Cowan Parkway, Davis Street, Harbor Bay Parkway, and High Street. Construction impacts would be limited to the construction period of the Proposed Project. Furthermore, construction activities would be restricted to the construction of the perimeter dike improvements; these improvements would be primarily on Airport property, with a small portion in the City of San Leandro, and would not occur in the right-of-way of any public roadways.

The Alameda County Transportation Commission, as the Congestion Management Agency for Alameda County, prepares the Congestion Management Program (CMP) that describes the strategies to assess and monitor the performance of the county's multimodal transportation system; address congestion and improve the performance of a multimodal system; and strengthen the integration of transportation and land use planning (Alameda Transportation Commission, 2013). The CMP designated a transportation network including all state highways and some arterials within Alameda County to be monitored by local jurisdictions. If the Level of Service (LOS) standard deteriorates on the CMP network, then local jurisdictions must prepare a deficiency plan to be in conformance with the CMP program. As discussed above, with the exception of truck trips during the construction period, the Proposed Project would not increase traffic on local roads or highways to a level that would affect intersection LOS. Therefore, the Proposed Project would not conflict with any County or Metropolitan Transportation Commission congestion management projects, level-of-service standards, travel demand measure, or other standards. The Proposed Project would not result in an increase in Airport operations, or the number of passengers or aircraft operations at the Airport. Therefore, the Proposed Project would not conflict with any CMP, and impacts would be less than significant.

c) Change in Air Traffic Patterns

The Proposed Project would improve the existing perimeter dike, thereby enhancing the safety of the Airport facilities. Construction activities would not interfere with the flights, use of runways, or other Airport operations. Vehicular traffic along the perimeter dike road is monitored by Airport operations, and permission is required from the ATCT to cross through the RSZ at either end of Runway 10/30. Vehicles are required to stop outside the RSZ and obtain clearance prior to crossing the RSZ. Construction activities and operations associated with the Proposed Project would not result in a change in air traffic patterns, air traffic activity, Airport operations, or in the number of passengers or aircraft operations at the Airport. Therefore, the Proposed Project would not impact air traffic patterns.

d) Road Safety Hazards

Construction and implementation of the Proposed Project would not change existing design features of roads and highways in the Project vicinity. Project construction and implementation would occur primarily on Airport property, with a small portion in the City of San Leandro. As described under **Section 3.XVI-a**, only a minor increase in roadway congestion may occur temporarily at various locations around the Airport as a result of construction-related vehicle traffic and workers traveling to and from the Project site. No other construction-related roadway impacts are anticipated to occur. These changes would not result in dangerous intersections or incompatible uses of the roadway. In addition, the operation of the Proposed Project would not change or affect roadways.

At the eastern end of the perimeter dike, construction trucks and equipment would cross the Bay Trail during an approximately 2-week construction period for the perimeter dike in the immediate area. Construction truck and equipment use of the trail could result in significant hazards by introducing incompatible vehicular uses on the trail, which serves non-motorized uses.

The Port would implement **Mitigation Measure RE-1** to avoid potential hazardous conditions for bicyclists and pedestrians on the Bay Trail through the temporary closure of the Bay Trail and the provision of a temporary alternate Bay Trail route. With the implementation of **Mitigation Measure RE-1**, potential hazards impacts from incompatible uses on the Bay Trail would be less than significant.

e) Emergency Access

As discussed above under **Sections 3.XVI-a** and **-b**, project-related traffic would be restricted to the construction of the perimeter dike improvements. Therefore, traffic associated with the Proposed Project would be minimal, and would not pose an obstacle to emergency response vehicles. Temporary impacts to emergency access related to the Proposed Project would be less than significant.

f) Adopted Policies, Plans, or Programs, and Safety of Public Transit, Bicycle, or Pedestrian Facilities

As described above, temporary effects of construction activities would result in significant impacts on the transportation and pedestrian/bicycle network through conflicts with trail users on the Bay Trail at the eastern end of the perimeter dike and closure of the Bay Trail for approximately 2 weeks during construction. However, as described above, the Port would implement **Mitigation Measure RE-1,** which would provide a temporary alternate Bay Trail route. With the implementation of **Mitigation Measure RE-1**, potential pedestrian or bicycle facilities impacts would be less than significant.

Implementation of the Proposed Project would not permanently change the existing or planned transportation network, or result in long-term increases in transit demand in the project vicinity. The Proposed Project would not conflict with adopted policies/objectives, plans (including the transportation elements of general plans for the cities of Oakland, Alameda, and San Leandro), or programs related to public transit, pedestrian, or bicycle facilities; therefore, impacts would be less than significant with implementation of the mitigation measure above.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS					
Would the project:					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c)	Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a) Wastewater Treatment

The Proposed Project would not result in new businesses or increase operational activities at the Airport that would introduce additional sources of pollutants, and/or increase discharges to the wastewater treatment system. In addition, because the Proposed Project would cause no increase in Airport operations, or the number of passengers or aircraft operations at the Airport, it would not result in additional generation of wastewater. Therefore, the Proposed Project would have no impact on wastewater treatment requirements of the RWQCB.

b) Construction of New Water and Wastewater Treatment Facilities

Potable water is supplied to OAK by the East Bay Municipal Utility District. OAK's sanitary wastewater is conveyed to and treated at the East Bay Municipal Utility District Wastewater Treatment Plant at the eastern end of the San Francisco–Oakland Bay Bridge before it is released into San Francisco Bay (EBMUD, 2014a, 2014b). Wastewater created from airplane-washing services, terminal sanitary sewer waste, aircraft lavatory waste, and grease traps are also directed into the sanitary sewer system. Because the Proposed Project would not increase Airport operations, or the number of passengers or aircraft operations at the Airport, the construction or expansion of water or wastewater treatment facilities

would not be required. Therefore, the Proposed Project would have no impact on water or wastewater treatment facilities.

c) Stormwater Drainage Facilities

As described under **Section 3.IX-a**, although the Proposed Project would include engineered-installation drainage systems on the inboard side of the sand portions of the dike to collect and control seepage water, these improvements would not change drainage patterns, and would not change the areas drained by the pump houses serving the project area. During operations, runoff would continue to be directed to the existing detention basins at the pump houses, prior to discharge to San Francisco Bay. In addition, the Port would comply with all applicable requirements and guidelines to meet water quality objectives for water discharge, as required by the General Construction Permit. As part of the General Construction Permit, the contractor would be required to prepare a SWPPP that would include erosion control measures to minimize the effects of erosion, sedimentation, and leakage of vehicle and equipment fluids, and other pollutants associated with construction activity. In addition, the Proposed Project would obtain a Section 401 Water Quality Certification/Waste Discharge Requirements permit from the RWQCB to certify that the Proposed Project would not violate state water quality standards. The Port of Oakland is also classified as a Small Non-Traditional Municipal Separate Storm Sewer System (Small MS4). The MS4 Permit requires an annual report, and the Port is required to provide information on construction projects that have taken place in the Port Area the previous year, and document the development of a project-specific SWPPP, and implementation of BMPs. The Industrial General Permit, and the Airport-wide SWPPP address industrial tenants at OAK, and are not associated with construction activities. Therefore, the Proposed Project would result in less-than-significant impacts associated with stormwater drainage facilities. To further reduce the impacts to quality of the stormwater discharge, the Port would implement **Mitigation Measures AQ-1 and HZ-3**, as described under **Section 3.IX – Hydrology and Water Quality**. Therefore, impacts of the Proposed Project associated with the construction of stormwater drainage facilities would be less than significant.

d) Water Supplies

The Proposed Project would not result in an increase in Airport operations, nor would the number of passengers at the Airport or water use increase as a result of the Proposed Project. Additionally, the Proposed Project would not require relocation or disturbance of public drinking-water supply pipelines or local distribution systems. Therefore, no impact on water supply is anticipated as a result of the Proposed Project.

e) Wastewater Treatment

The Proposed Project would not increase Airport operations or the number of passengers at the Airport, and it would not result in increased wastewater discharges or introduce additional sources of pollutants to the wastewater treatment system. Therefore, there would be no impact on the capacity of the wastewater treatment system to serve the Proposed Project, in addition to the system's existing commitments.

f, g) Landfill Capacity and Compliance with Solid Waste Regulations

The City of Oakland has a Construction and Demolition Debris and Recycling Ordinance, which includes detailed specifications and defined responsibilities for meeting the City's waste reduction and recycling requirements. The Ordinance requires projects to recycle 100 percent of all asphalt and concrete materials, and 65 percent of all other materials (City of Oakland, 2014a). In addition, Alameda County Department of Environmental Health's Solid/Medical Waste program oversees the solid waste collection, disposal, recycling, and hazardous waste programs at OAK. The solid wastes collected at OAK are taken to local transfer stations, where they are prepared for transportation to Altamont Landfill and Resource Recovery Facility, Tri-Cities Landfill, or any other appropriate landfills (Alameda County, 2014). Altamont Landfill and Resource Recovery Facility, operated by Waste Management of Alameda County, has a total estimated permitted capacity of 62 million cubic yards. Currently, approximately 16.3 million cubic yards (approximately 26.3 percent) have been used, and approximately 45.7 million cubic yards of capacity remain (approximately 73.7 percent). The facility has a projected closure date of 2025 (CalRecycle, 2014).

The Airport's Materials Management Program diverts recyclable construction materials from public landfills—such as concrete and asphalt—and converts them into reusable material for new Airport construction and maintenance projects (OAK, 2014). The Materials Management Program has designated sites for material stockpiling and recycling (**Figure 2-9**), allowing for the reduction of disposal and material purchasing costs, and reduction of truck emissions associated with landfill disposal of waste. Debris associated with construction of the Proposed Project would be recycled wherever feasible, in accordance with applicable laws, ordinances, and regulatory requirements. The volume of post-diversion demolition debris (debris that remains for disposal after recycling has occurred) would not be significant relative to existing annual disposal volumes at local landfills, and would not result in significant impacts on solid waste. The proposed Project would not result in solid waste during operation. Therefore, no new solid waste facilities or expansion of existing facilities would be required as a result of the Proposed Project, because the Proposed Project would cause no increase in Airport operations, or of the number of passengers or aircraft operations at the Airport. Therefore, solid waste generated from the Proposed Project's construction and operation would not impact the projected life of the landfill, and impacts from solid waste generation or impacts on solid waste facilities.

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

a) Degrade the Quality of the Environment

As described in detail above, all of the potential impacts from the proposed improvements at the perimeter dike would be associated with construction activities, because the Proposed Project would not result in any change to the existing operations at the Airport, including the number of passengers or aircrafts at the Airport. The Proposed Project has the potential to result in significant impacts in the following areas: air quality, biological resources, hazards and hazardous materials, hydrology and water quality, land use and planning, recreation, and transportation/traffic. Incorporation and implementation of the mitigation measures identified in this document would reduce all potentially significant project-related impacts to less-than-significant levels. Therefore, the Proposed Project would not degrade the quality of the environment, and would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b) Cumulative Impacts

Past, present, and reasonably foreseeable projects (**Table 3-9**) within the Airport and its vicinity include demolition of the Airport Traffic Control Tower (ATCT), construction of a new ATCT, FAA ATCT Lighting, OAK Terminal Improvements, OAK Runway Safety Area Improvement Project, BART Airport Connector, Federal Express International Sort Building construction, , Apron and Taxiway Improvements, and Utility Program Upgrade. Off-Airport cumulative projects include: construction of a storage facility at 8350 Pardee Drive, BART Airport Connector, Rolls-Royce Engine Services Test Cell Upgrade, and Ron Cowan Parkway Class I Bike Path.

Table 3-9
Past, Present, and Reasonably Foreseeable Cumulative Projects

	Project Name	Description
On-Airport Projects		
PAST	**Replacement of ATCT**	Constructed a new FAA airport traffic control tower to consolidate two existing towers (South Field ATCT and North Field ATCT) to improve visibility of the airfield. Construction began in 2010 and ended in 2013.
	Federal Express	This project includes construction of a new 200,000-square-foot International Sort Building for handling cargo, and a 4,000-square-foot building for security and administrative purposes; minor interior renovations to the existing international and Metroplex buildings; expansion of the ground support equipment maintenance facility; relocation of the loading docks and container decks; and installation of a fuel cell power generation facility (converts natural gas to electricity). The project was completed in 2014.
	BART Airport Connector	This project involves the construction of a link from OAK via an automated guide way transit system from the Coliseum BART Station to a new BART station at the Airport. The 3.2-mile elevated connector is located primarily within the median of Hegenberger Road from the Coliseum BART Station to Doolittle Drive, and on Airport property. The automated guide way transit operates in its own exclusive right-of-way. The project was completed in 2014.
	Rolls-Royce Engine Services – Oakland Inc., Test Cell Upgrade Project	This project involves modification to the internal conditions of the Test Cell Facility to include the conversion of the indoor propeller test stand, Test Cell #1, into a dynamometer test stand configuration. Externally, the only visible changes to the site are expected to be the addition of a water cooling system for the dynamometer, water supply, and return piping with associated water pumps from the dynamometer to the cooling tower system, and an oil/water separation system, similar to ones that are used for Test Cells #6 and #7. The project was completed in 2014.
	8350 Pardee Drive	This project involves construction of a 374,725-square-foot distribution and storage facility, composed of an approximately 364,725-square-foot distribution and storage facility and two 5,000-square-foot offices in the southeast and southwest corners of the building. The distribution facility would operate as a conventional warehouse, with racked products which would be received, repackaged, stored as inventory, and distributed. Some limited assembly could occur on site, such as product testing and assembly of parts and equipment. This project was completed in 2014.
	Pump House 6 Replacement	This project involves reconstruction of Pump House 6 in the same forebay and outfall location. The structure has exceeded its design life; the steel piles supporting the pump house are corroded, and the entire structure needs to be replaced. Reconstruction of the pump house allows installation of updated materials and technology. The reconstructed pump house helps to prevent flooding of a significant portion of OAK. This project was completed in April 2015.
	Utility Program Upgrade	This project includes the replacement of critical and deteriorating utility infrastructure, a Terminal 1 substation, and a sanitary sewer along Airport Drive. This project was completed in 2014
	South Field OAK Runway Safety Area Improvement Project	This project includes a combination of runway shifts, resurfacing, and other improvements for the four Airport runways. This project would not change operations or increase aircraft activity at the airport. The project will be completed in 2015.
	Ron Cowan Parkway Class I Bike Path	A Class 1 bike trail will be extended along the southern side of Ron Cowan Parkway, connecting Air Cargo Road to Harbor Bay Parkway. In accordance with the permit conditions, the Notice of Completion will be sent to BCDC after the trail has been in place 1 year, or November 2015. The project was completed in November 2014.

Table 3-9
Past, Present, and Reasonably Foreseeable Cumulative Projects (Continued)

	Project Name	Description
On-Airport Projects		
PRESENT	**New FAA ATCT Lighting**	This project includes installation of additional lighting on the airfield and around the ATCT. Construction of this project started in 2014 and is expected to be completed in 2020.
	OAK Terminal Improvements	This project involves renovation and retrofits of Terminal 1, including a utility plant; upgrade of security systems; and replacing Terminal 2 roof (Building M130). Construction of this project started in 2014 and is expected to be completed in 2017.
	North Field OAK Runway Safety Area Improvement Project	This project includes a combination of runway shifts, resurfacing, and other improvements for the two North Field Airport runways. This project would not change operations or increase aircraft activity at the airport. The project will be completed in 2015.
	Demolition of South Field ATCT	As noted above, a new ATCT has been constructed and is now operational. The South ATCT is no longer needed, and does not conform to seismic and building code standards. This project involves demolishing floors 3 through 10 (which extend above Terminal 1). This project will be completed in 2015.
	South and North Field Runway, Apron and Taxiway Improvements	This project includes the overlay of Taxiway S and B, and Runway 12/30 on the South Field; and the overlay of Runway 15/33, and apron improvements at Hangars 3, 4,5, 6, and L-118, and Taxiway Q. Construction of this project started in 2014 and is expected to be completed in 2020.

Notes:
ATCT = Air Traffic Control Tower
BART = Bay Area Rapid Transit
FAA = Federal Aviation Administration
OAK = Oakland International Airport

Cumulative development, including the list of present projects identified in **Table 3-9**, could result in impacts to environmental resources that could combine with the impacts of the Proposed Project. The Proposed Project would not cause impacts related to aesthetics, agriculture and forestry resources, mineral resources, or population and housing. Therefore, the Proposed Project would not contribute to cumulative impacts associated with these resources. The remaining resource areas that could be affected by the Proposed Project are discussed below.

Air Quality

The Bay Area is in non-attainment for ozone, PM_{10}, and $PM_{2.5}$ (federal and state standards). All of the cumulative projects identified in **Table 3-9** have used or use construction equipment and earth disturbance resulting in emissions of ozone precursors and particulates. Cumulative projects listed in **Table 3-9** would be subject to applicable regulations for emissions during construction and operation. Therefore, cumulative projects would result in less-than-significant cumulative impacts to air quality. The Proposed Project would not change the operations at the Airport, or result in a net increase in long-term operational emissions from any other activities.

BAAQMD's *California Environmental Quality Act* (*CEQA) Air Quality Guidelines* provides a list of BMPs to control fugitive dust emissions. Specifically, the BAAQMD has identified eight construction mitigation measures that would help to reduce fugitive dust emissions. The Port would implement **Mitigation**

Measure AQ-1, described in **Section 3.III – Air Quality**, to reduce fugitive dust impacts. **Mitigation Measure AQ-1** would reduce the Proposed Project's construction-related impacts on air quality to a less-than-significant level.

In addition, the project construction activities would be temporary in duration, and limited to the perimeter dike, with minimal offsite vehicle trips. Therefore, the cumulative projects, together with the proposed project, would result in less-than-significant cumulative air-quality impacts.

Biological Resources

The Proposed Project, along with past land reclamation and development projects, and other cumulative projects such as the RSA improvements, could result in significant cumulative impacts to biological resources, such as loss of wetlands and other habitat for special-status species. All of the cumulative projects identified in **Table 3-9** that would result in a loss of biological resources would be required to obtain permits from regulatory agencies, which would themselves impose mitigation to reduce impacts to biological resources. The Proposed Project could affect sensitive wildlife habitats, special-status species, and non-tidal wetlands and waters of the U.S. The Proposed Project's contribution to cumulatively significant impacts to biological resources could therefore be cumulatively considerable, which would be a potentially significant cumulative impact on biological resources.

The Proposed Project would result in an unavoidable permanent impact to up to 5.06 acres of impacts to wetlands and waters of the U.S. In addition, the proposed project would permanently remove and temporarily disturb marginal suitable habitat for Ridgway's Rail and salt harvest mouse. The Port would implement BMPs, as described in **Section 2.6**, that would minimize impacts to any other wildlife habitats within the study area. In addition, the Port would mitigate for the impacts to sensitive wildlife habitats, special-status species, and non-tidal wetlands and waters of the U.S., with a combination of BMPs, avoidance, minimization, and compensatory mitigation, all of which will achieve the federal and state goal of no net loss of wetlands, and no net loss of species habitat. In addition, the Port would implement seasonal and distance restrictions during construction in the event that special-status species are found to be present through preconstruction surveys. These measures are described in detail in this document in **Mitigation Measures BO-1** through **BO-4**. With implementation of these mitigation measures, the contribution of the Proposed Project to cumulatively significant biological resources impacts would not be cumulatively considerable, and would therefore be less than significant with mitigation.

Cultural Resources

As described **in Section 3.V – Cultural Resources,** the Proposed Project would not have significant impacts on cultural resources. The Proposed Project would therefore not have a cumulatively significant contribution to significant cultural resources impacts. As such, the Proposed Project would result in less-than-significant cumulative impacts associated with cultural resources.

Geology and Soils

The cumulative projects listed in **Table 3-9** would be subject to applicable regulations for grading, drainage, civil and structural design–including stringent seismic standards—and would be required to

comply with the California Building Standard Code. Based on compliance with these applicable regulations, the cumulative impacts to geology and soils would be less-than-significant.

Greenhouse Gas Emissions

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea-level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity (California Climate Change Portal, 2010). Cumulative projects, through construction and/or operation, would increase GHGs directly, and would result in additional vehicle trips or other activities that would generate GHGs. These activities would result in significant cumulative impacts to GHGs. The Proposed Project would result in GHG emissions during construction activities only; these emissions would be minor, temporary, and associated only with the construction period. Furthermore, the Proposed Project would not conflict with the state's GHG reduction goals, as defined in AB 32. The Port would implement **Mitigation Measure AQ-1** to reduce construction emissions to less-than-significant levels. Therefore, the Proposed Project's contribution to cumulatively significant GHG impacts would not be cumulatively considerable, and would be less than significant with mitigation.

Hazards and Hazardous Materials

Impacts from hazards are generally site-specific, and typically do not result in cumulative impacts. Any hazards present at surrounding development sites would be subject to the federal, state, and local regulations and requirements discussed for the Proposed Project, above. However, cumulative impacts could be significant because construction sites typically involve the use of hazardous materials, which could result in upset or accident conditions creating a significant hazard to the public or the environment, or because unknown contamination could migrate downgradient to affect larger areas. The project site is located on Airport property, with a small portion in the City of San Leandro; this area is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. In addition, construction activities would be near active fuel pipelines that could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, the Proposed Project, combined with past, present, and reasonably foreseeable projects, could result in potentially significant cumulative impacts related to hazards and hazardous materials.

The handling of hazardous materials associated with Proposed Project construction, and the possibility of encountering, in select areas, soil and/or groundwater contamination, or other materials during construction, could result in a cumulatively considerable contribution to cumulatively significant hazardous materials impacts. These impacts would be substantially reduced through compliance with applicable federal, state, and local regulations, and the implementation of **Mitigation Measures HZ-1** through **HZ-3**. Because of the localized and temporary nature of project activities, substantial regulatory requirements, and the commitment to the mitigation measures described above, potential spills and accidents would be avoided, and the Proposed Project's contribution to cumulative hazardous materials impacts would not be

cumulatively considerable. The Proposed Project's cumulative impacts would therefore be less than significant with mitigation.

Hydrology and Water Quality

If a SWPPP was not developed or BMPs implemented the development projects at and in the vicinity of the Airport could result in temporary and permanent impacts to hydrology and water quality, and could potentially exceed applicable water quality standards. The Proposed Project, along with other projects presented in **Table 3-9** (such as the North Field and South Field OAK Runway Safety Area Improvement Projects, and the South and North Field Runway, Apron, and Taxiway Improvements) could contribute to significant cumulative impacts to hydrology and water quality. Construction activities and new facilities or operations have the potential to introduce different types of pollutants in groundwater and in stormwater runoff, increase water consumption, and increase wastewater or industrial treatment volumes. However, existing programs, policies, and regulatory requirements would prevent and/or minimize such degradation. Such programs, policies, and regulatory requirements mandate implementation of BMPs and other project-specific measures to ensure that discharges to receiving waters meet applicable water-quality objectives. These measures would be implemented in conjunction with the required project-specific SWPPP to protect water quality during construction. Therefore, development projects would not likely result in substantial alteration of drainage patterns or flood flows, or create or contribute to runoff water that would exceed the capacity of stormwater drainage systems. The Port would implement **Mitigation Measures AQ-1** to reduce impacts associated with sedimentation from stormwater runoff. In addition, the Port would implement **Mitigation Measures HZ-1** through **HZ-3** to regulate the use of hazardous materials during construction; provide in-situ soil improvements near active fuel pipelines, and fuel pipeline monitoring during construction; ensure appropriate handling of contaminated soils and groundwater if encountered during construction; and ensure water testing, storage, and treatment, in compliance with applicable NPDES or pretreatment permits during dewatering. In addition, implementation of **Mitigation Measure BO-4** would fully compensate for the loss of wetlands and waters of the U.S. associated with the Proposed Project.

Therefore, the Proposed Project's contribution to significant cumulative hydrology and water quality impacts would not be cumulatively considerable and cumulative impacts would be less than significant with mitigation.

Land Use and Planning

The cumulative projects listed in **Table 3-9** would not directly affect the same land uses as the proposed project, would not substantially affect the Bay Trail, and are not in the immediate vicinity (e.g., perimeter dike). Therefore, the cumulative projects, together with the proposed project, would result in less-than-significant cumulative land use impacts.

Noise

As described under **Section 3.XII – Noise** of this document, the nearest noise-sensitive receiver associated with the Proposed Project during the construction period would be separated from noise- and vibration-generating activities by a distance of approximately 200 feet. Furthermore, there are no noise-

sensitive land uses newly exposed to Community Noise Equivalent Level 65 dBA. Existing ambient noise at the project area would remain unchanged as a result of the Proposed Project. In light of the above, the Proposed Project's noise impacts would not be cumulatively considerable, and the Proposed Project would result in less-than-significant cumulative noise impacts.

Public Services

The cumulative projects listed in **Table 3-9** would not substantially increase demand on parks or trail faculties. In addition, the Ron Cowan Parkway Class I Bike Path project would have a beneficial impact on trails. Therefore, the proposed project, in combination with other cumulative projects, would have no impact.

Recreation

The cumulative projects presented in **Table 3-9** would not have substantial adverse impacts on recreational trail resources such as the Bay Trail. In addition, the Ron Cowan Parkway Class I Bike Path would result in beneficial impacts to recreational resources. Therefore, the Proposed Project, in combination with the cumulative projects, would result in less-than-significant cumulative impacts to recreational resources.

Transportation/Traffic

The Proposed Project's transportation impacts considered in combination with other projects in the project area, and existing traffic associated with the Airport and the Port could result in significant cumulative transportation impacts. As discussed under **Section 3.XVI – Transportation/Traffic** of this document, additional traffic resulting from the Proposed Project during the construction period would neither be substantial relative to the existing traffic volume, nor disrupt traffic flows. Simultaneous construction of other projects—such as the North Field and South Field OAK Runway Safety Area Improvement Projects and South and North Field Runway, Apron, and Taxiway Improvements—may result in a disruption to local traffic circulation. However, these projects have established mitigation measures that include traffic control measures and alternate lane locations, which would reduce the potential for conflicts with traffic associated with the Proposed Project.

Construction truck and equipment use of the trail could contribute to the increase in disruption of bicycle and pedestrian circulation along the Bay Trail. The Proposed Project, along with other projects such as the Class I Bike Path, could contribute to cumulative impacts associated with the disruption of bike traffic. The Port would implement **Mitigation Measure RE-1** to reduce circulation system impacts to bicycle and pedestrian facilities on the Bay Trail. Therefore, the Proposed Project's contribution to significant cumulative impacts relating to transportation and traffic would not be cumulatively considerable, and cumulative transportation impacts associated with the Proposed Project would be less than significant with mitigation.

Utilities and Service Systems

The Proposed Project, along with other projects presented in **Table 3-9** (such as the Pump House No. 6 project and the RSA improvements;, and the South and North Field Runway, Apron, and Taxiway Improvements), could contribute additional storm water to drainage systems. Permanent upgrades associated

with Pump House No. 6 Replacement and other drainage projects would improve the drainage systems at the Airport, and contribute to offsetting the impacts of other development projects at the Airport. In addition, the Port would implement **Mitigation Measure AQ-1** to reduce impacts associated with particulates in stormwater runoff. Also, the Port would implement **Mitigation Measure HZ-3** to ensure that groundwater is not contaminated by the Proposed Project; this would eliminate a potential impact to surface or groundwater. Therefore, the Proposed Project's contribution to significant cumulative impacts relating to utilities and service systems would not be cumulatively considerable, and cumulative impacts would be less than significant.

c) Direct or Indirect Adverse Effects on Human Beings

This document identifies potential significant impacts associated with air quality, biological resources, cultural resources, land use and planning, hazards and hazardous materials, hydrology and water quality, recreation, transportation/traffic, and utilities. Mitigation measures have been identified for all potentially significant impacts to reduce them to less-than-significant levels. Proposed Project impacts related to GHG emissions, geology and soils, noise, and public services would be less than significant. The Proposed Project would have no impact on aesthetics, agriculture and forestry resources, mineral resources, or population and housing. Cumulative impacts would be less than significant. Therefore, the Proposed Project would not result in environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

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CHAPTER 4.0
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CHAPTER 6.0
ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AC Transit	Alameda-Contra Costa Transit District
AGS	AGS, Inc.
Airport	Oakland International Airport
ALUC	Airport Land Use Commission
ALUPP	Airport Land Use Policy Plan
ATCT	Air Traffic Control Tower
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Bay Plan	San Francisco Bay Plan
Bay Trail	San Francisco Bay Trail
BCDC	San Francisco Bay Conservation and Development Commission
BMP	best management practice
BP	Before Present
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
C-APE	California Environmental Quality Act-Area of Potential Effects
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CH_4	methane
CMP	Congestion Management Program
CNPS	California Native Plant Society
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibel
EBMUD	East Bay Municipal Utility District
EDR	Environmental Data Resources, Inc.
EFH	Essential Fish Habitat
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	U.S. Department of Transportation, Federal Highway Administration

FHWG	Fisheries Hydroacoustic Working Group
FIRM	Flood Insurance Rate Map
FMP	fisheries management plan
FTA	Federal Transit Administration
GHG	greenhouse gas
I-580	Interstate 580
I-880	Interstate 880
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
KMEP	Kinder Morgan Energy Partners, L.P.
L_{dn}	day-night average noise level
L_{eq}	equivalent sound level
LFR	LFR, Inc.
LOS	Level of Service
L_v	annoyance vibration level
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MLD	Most Likely Descendant
M_{max}	maximum moment magnitude earthquake
MMS	Port of Oakland's Materials Management Site
msl	mean sea level
NAHC	California Native American Heritage Commission
NMFS	National Marine Fisheries Service
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
OAK	Oakland International Airport
OBM	Old Bay Mud
OPR	Office of Planning and Research
PFMC	Pacific Fishery Management Council
PM_{10}	particulate matter with a diameter equal to or less than 10 microns
$PM_{2.5}$	particulate matter with a diameter equal to or less than 2.5 microns
Port	Port of Oakland
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1969
PRC	Public Resources Code
Proposed Project	Airport Perimeter Dike Federal Emergency Management Agency and Seismic Improvements Project
ROG	reactive organic gas
RSA	Runway Safety Area
RSZ	runway safety zone
RWQCB	San Francisco Regional Water Quality Control Board
SFA	Sustainable Fisheries Act of 1996

SFPP	SFPP, L.P.
Shell	Shell Pipeline Company
SVP	Society of Vertebrate Paleontology
SWL	Stillwater Level
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TWL	Total Water Level
U.S. EPA	United States Environmental Protection Agency
UCMP	University of California Museum of Paleontology
URS	URS Corporation
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VAR	Vulnerability Assessment Report
VdB	vibration velocity decibels
water of the U.S.	water of the United States
YBM	Young Bay Mud

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Appendix A

Air Emissions Modeling Results

Oakland Airport Perimeter Dike Construction Emissions

Criteria Pollutant Emissions

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total (tons)	0.5551	6.2604	4.1084	8.81E-03	0.3316	0.239	0.5707	0.1148	0.2201	0.3349
Total (lbs)	1110.2	12520.8	8216.8	17.62	663.2	478	1141.4	229.6	440.2	669.8
Average Daily Emissions (lbs/day)	**1.8**	**20.3**	**13.3**	**0.0**	**1.1**	**0.8**	**1.9**	**0.4**	**0.7**	**1.1**

Notes:
Average daily emissions assume a construction period of 28 months (22 days/month)

GHG Emissions

	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Total (metric tons)	0.0	816.0	816.0	0.1	0.0	818.0
Amortized over 30 years (metric tons)	**0.0**	**27.2**	**27.2**	**0.0**	**0.0**	**27.3**

Oakland Airport Perimeter Dike Construction

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Emissions from construction activities.

Land Use - User defined land use type for construction project. Unit lot acreage entered, project specific construction activity used.

Construction Phase - Project specific construction activity used. All emissions modeled based on total hours and trips, calculated using unit day construction duration

Off-road Equipment - Project specific equipment list. Hours reflect total hours of operation.

Off-road Equipment - Project specific equipment list. Hours reflect total hours of operation.

Off-road Equipment - Project specific equipment list. Hours reflect total hours of operation.

Grading -

Trips and VMT - Project specific trips used. Total worker trips and haul trips entered.

Energy Use -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00

tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	PhaseEndDate	1/2/2015	1/1/2015
tblConstructionPhase	PhaseEndDate	1/2/2015	1/1/2015
tblConstructionPhase	PhaseStartDate	1/2/2015	1/1/2015
tblConstructionPhase	PhaseStartDate	1/2/2015	1/1/2015
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	HorsePower	174.00	125.00
tblOffRoadEquipment	HorsePower	174.00	125.00
tblOffRoadEquipment	HorsePower	80.00	120.00
tblOffRoadEquipment	HorsePower	80.00	120.00
tblOffRoadEquipment	HorsePower	174.00	125.00
tblOffRoadEquipment	HorsePower	80.00	120.00
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers

tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Items A - C
tblOffRoadEquipment	PhaseName		Items A - C
tblOffRoadEquipment	PhaseName		Items D - I
tblOffRoadEquipment	PhaseName		Items D - I
tblOffRoadEquipment	PhaseName		Items D - I

tblOffRoadEquipment	PhaseName		Items D - I
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	PhaseName		Items J - W
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	208.00
tblOffRoadEquipment	UsageHours	7.00	431.00
tblOffRoadEquipment	UsageHours	8.00	137.00
tblOffRoadEquipment	UsageHours	6.00	321.00
tblOffRoadEquipment	UsageHours	7.00	137.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	193.00
tblOffRoadEquipment	UsageHours	8.00	193.00
tblOffRoadEquipment	UsageHours	6.00	280.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	7.00	11.00
tblOffRoadEquipment	UsageHours	6.00	113.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	3,383.00
tblTripsAndVMT	HaulingTripNumber	0.00	10,375.00
tblTripsAndVMT	WorkerTripNumber	20.00	557.00

tblTripsAndVMT	WorkerTripNumber	65.00	3,258.00
tblTripsAndVMT	WorkerTripNumber	0.00	2,843.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.5551	6.2604	4.1084	8.8100e-003	0.3316	0.2390	0.5707	0.1148	0.2201	0.3349	0.0000	815.9635	815.9635	0.0965	0.0000	817.9896
Total	**0.5551**	**6.2604**	**4.1084**	**8.8100e-003**	**0.3316**	**0.2390**	**0.5707**	**0.1148**	**0.2201**	**0.3349**	**0.0000**	**815.9635**	**815.9635**	**0.0965**	**0.0000**	**817.9896**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.5551	6.2604	4.1084	8.8100e-003	0.3316	0.2390	0.5707	0.1148	0.2201	0.3349	0.0000	815.9631	815.9631	0.0965	0.0000	817.9892
Total	**0.5551**	**6.2604**	**4.1084**	**8.8100e-003**	**0.3316**	**0.2390**	**0.5707**	**0.1148**	**0.2201**	**0.3349**	**0.0000**	**815.9631**	**815.9631**	**0.0965**	**0.0000**	**817.9892**

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

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Items A - C	Site Preparation	1/1/2015	1/1/2015	5	1	
2	Items D - I	Grading	1/1/2015	1/1/2015	5	1	
3	Items J - W	Building Construction	1/1/2015	1/1/2015	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Items A - C	Rubber Tired Dozers	1	193.00	255	0.40
Items A - C	Tractors/Loaders/Backhoes	1	193.00	97	0.37
Items A - C	Dumpers/Tenders	1	137.00	16	0.38
Items J - W	Generator Sets	0	0.00	84	0.74
Items J - W	Cranes	0	0.00	226	0.29
Items J - W	Forklifts	0	0.00	89	0.20
Items A - C	Graders	0	0.00	174	0.41

Items A - C	Dumpers/Tenders	3	193.00	16	0.38
Items D - I	Graders	2	280.00	125	0.41
Items D - I	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Items D - I	Rubber Tired Dozers	0	0.00	255	0.40
Items J - W	Tractors/Loaders/Backhoes	1	208.00	97	0.37
Items D - I	Tractors/Loaders/Backhoes	1	11.00	97	0.37
Items D - I	Tractors/Loaders/Backhoes	2	431.00	97	0.37
Items D - I	Rollers	4	321.00	120	0.38
Items A - C	Tractors/Loaders/Backhoes	1	137.00	97	0.37
Items D - I	Graders	4	321.00	125	0.41
Items D - I	Rollers	2	280.00	120	0.38
Items A - C	Rubber Tired Dozers	1	137.00	255	0.40
Items J - W	Welders	0	0.00	46	0.45
Items D - I	Off-Highway Trucks	2	389.00	400	0.38
Items D - I	Off-Highway Trucks	2	389.00	400	0.38
Items J - W	Tractors/Loaders/Backhoes	1	113.00	97	0.37
Items J - W	Graders	1	57.00	125	0.41
Items J - W	Rollers	1	57.00	120	0.38
Items J - W	Off-Highway Trucks	2	139.00	400	0.38
Items J - W	Off-Highway Trucks	1	57.00	400	0.38
Items J - W	Rubber Tired Dozers	2	14.00	255	0.40
Items J - W	Rubber Tired Dozers	1	208.00	255	0.40
Items J - W	Dumpers/Tenders	3	208.00	16	0.38
Items J - W	Dumpers/Tenders	1	113.00	16	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Items A - C	8	557.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Items D - I	26	3,258.00	0.00	3,383.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Items J - W	14	2,843.00	0.00	10,375.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Items A - C - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1242	0.0000	0.1242	0.0683	0.0000	0.0683	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0370	0.3886	0.2877	2.8000e-004		0.0203	0.0203		0.0187	0.0187	0.0000	26.0760	26.0760	7.3200e-003	0.0000	26.2296
Total	**0.0370**	**0.3886**	**0.2877**	**2.8000e-004**	**0.1242**	**0.0203**	**0.1445**	**0.0683**	**0.0187**	**0.0870**	**0.0000**	**26.0760**	**26.0760**	**7.3200e-003**	**0.0000**	**26.2296**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	1.7600e-003	0.0171	3.0000e-005	2.5300e-003	2.0000e-005	2.5500e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.3812	2.3812	1.4000e-004	0.0000	2.3842
Total	**1.2000e-003**	**1.7600e-003**	**0.0171**	**3.0000e-005**	**2.5300e-003**	**2.0000e-005**	**2.5500e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.3812**	**2.3812**	**1.4000e-004**	**0.0000**	**2.3842**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1242	0.0000	0.1242	0.0683	0.0000	0.0683	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0370	0.3886	0.2877	2.8000e-004		0.0203	0.0203		0.0187	0.0187	0.0000	26.0760	26.0760	7.3200e-003	0.0000	26.2296
Total	**0.0370**	**0.3886**	**0.2877**	**2.8000e-004**	**0.1242**	**0.0203**	**0.1445**	**0.0683**	**0.0187**	**0.0870**	**0.0000**	**26.0760**	**26.0760**	**7.3200e-003**	**0.0000**	**26.2296**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	1.7600e-003	0.0171	3.0000e-005	2.5300e-003	2.0000e-005	2.5500e-003	6.7000e-004	2.0000e-005	6.9000e-004	0.0000	2.3812	2.3812	1.4000e-004	0.0000	2.3842
Total	**1.2000e-003**	**1.7600e-003**	**0.0171**	**3.0000e-005**	**2.5300e-003**	**2.0000e-005**	**2.5500e-003**	**6.7000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.3812**	**2.3812**	**1.4000e-004**	**0.0000**	**2.3842**

3.3 Items D - I - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0611	0.0000	0.0611	6.6000e-003	0.0000	6.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2713	2.8499	1.4295	2.4200e-003		0.1538	0.1538		0.1415	0.1415	0.0000	230.8368	230.8368	0.0689	0.0000	232.2840
Total	**0.2713**	**2.8499**	**1.4295**	**2.4200e-003**	**0.0611**	**0.1538**	**0.2149**	**6.6000e-003**	**0.1415**	**0.1481**	**0.0000**	**230.8368**	**230.8368**	**0.0689**	**0.0000**	**232.2840**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.5897	0.4492	1.2800e-003	0.0285	8.8300e-003	0.0374	7.8400e-003	8.1200e-003	0.0160	0.0000	118.1411	118.1411	1.0000e-003	0.0000	118.1621
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-003	0.0103	0.0999	1.8000e-004	0.0148	1.3000e-004	0.0149	3.9300e-003	1.2000e-004	4.0600e-003	0.0000	13.9280	13.9280	8.4000e-004	0.0000	13.9456
Total	**0.0505**	**0.6000**	**0.5491**	**1.4600e-003**	**0.0433**	**8.9600e-003**	**0.0523**	**0.0118**	**8.2400e-003**	**0.0200**	**0.0000**	**132.0692**	**132.0692**	**1.8400e-003**	**0.0000**	**132.1077**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0611	0.0000	0.0611	6.6000e-003	0.0000	6.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2713	2.8499	1.4295	2.4200e-003		0.1538	0.1538		0.1415	0.1415	0.0000	230.8365	230.8365	0.0689	0.0000	232.2837

Total	**0.2713**	**2.8499**	**1.4295**	**2.4200e-003**	**0.0611**	**0.1538**	**0.2149**	**6.6000e-003**	**0.1415**	**0.1481**	**0.0000**	**230.8365**	**230.8365**	**0.0689**	**0.0000**	**232.2837**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.5897	0.4492	1.2800e-003	0.0285	8.8300e-003	0.0374	7.8400e-003	8.1200e-003	0.0160	0.0000	118.1411	118.1411	1.0000e-003	0.0000	118.1621
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-003	0.0103	0.0999	1.8000e-004	0.0148	1.3000e-004	0.0149	3.9300e-003	1.2000e-004	4.0600e-003	0.0000	13.9280	13.9280	8.4000e-004	0.0000	13.9456
Total	**0.0505**	**0.6000**	**0.5491**	**1.4600e-003**	**0.0433**	**8.9600e-003**	**0.0523**	**0.0118**	**8.2400e-003**	**0.0200**	**0.0000**	**132.0692**	**132.0692**	**1.8400e-003**	**0.0000**	**132.1077**

3.4 Items J - W - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0557	0.6027	0.3602	5.3000e-004		0.0288	0.0288		0.0266	0.0266	0.0000	50.1307	50.1307	0.0145	0.0000	50.4349
Total	**0.0557**	**0.6027**	**0.3602**	**5.3000e-004**		**0.0288**	**0.0288**		**0.0266**	**0.0266**	**0.0000**	**50.1307**	**50.1307**	**0.0145**	**0.0000**	**50.4349**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1333	1.8083	1.3777	3.9300e-003	0.0875	0.0271	0.1146	0.0241	0.0249	0.0490	0.0000	362.3158	362.3158	3.0600e-003	0.0000	362.3800
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1100e-003	8.9900e-003	0.0872	1.5000e-004	0.0129	1.2000e-004	0.0130	3.4300e-003	1.1000e-004	3.5400e-003	0.0000	12.1539	12.1539	7.3000e-004	0.0000	12.1692
Total	**0.1394**	**1.8173**	**1.4649**	**4.0800e-003**	**0.1004**	**0.0272**	**0.1276**	**0.0275**	**0.0250**	**0.0525**	**0.0000**	**374.4697**	**374.4697**	**3.7900e-003**	**0.0000**	**374.5493**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0557	0.6027	0.3602	5.3000e-004		0.0288	0.0288		0.0266	0.0266	0.0000	50.1307	50.1307	0.0145	0.0000	50.4348
Total	**0.0557**	**0.6027**	**0.3602**	**5.3000e-004**		**0.0288**	**0.0288**		**0.0266**	**0.0266**	**0.0000**	**50.1307**	**50.1307**	**0.0145**	**0.0000**	**50.4348**

Mitigated Construction Off-Site

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

Hauling	0.1333	1.8083	1.3777	3.9300e-003	0.0875	0.0271	0.1146	0.0241	0.0249	0.0490	0.0000	362.3158	362.3158	3.0600e-003	0.0000	362.3800
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1100e-003	8.9900e-003	0.0872	1.5000e-004	0.0129	1.2000e-004	0.0130	3.4300e-003	1.1000e-004	3.5400e-003	0.0000	12.1539	12.1539	7.3000e-004	0.0000	12.1692
Total	**0.1394**	**1.8173**	**1.4649**	**4.0800e-003**	**0.1004**	**0.0272**	**0.1276**	**0.0275**	**0.0250**	**0.0525**	**0.0000**	**374.4697**	**374.4697**	**3.7900e-003**	**0.0000**	**374.5493**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.542001	0.061858	0.168333	0.112636	0.031145	0.004643	0.019061	0.047615	0.001767	0.003701	0.005606	0.000207	0.001427

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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

6.2 Area by SubCategory

Unmitigated

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

Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

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

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Vegetation

Appendix B

Mitigation Monitoring and Reporting Program

AIRPORT PERIMETER DIKE FEMA AND SEISMIC IMPROVEMENT PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

The California Environmental Quality Act requires that feasible mitigation measures be adopted to reduce the severity and magnitude of potentially significant environmental impacts associated with project development. Any public agency that adopts measures to mitigate or avoid the significant impacts of a proposed project is required to ensure that the measures are fully enforceable, through permit conditions, agreements, or other means (Public Resources Code Section 21081.6[b]). If a public agency requires that mitigation measures be taken to reduce or avoid significant project impacts not incorporated into the design or program for the project, these mitigation measures may be made conditions of project approval as set forth in a Mitigation Monitoring and Reporting Program (MMRP). The program must be designed to ensure project compliance with mitigation measures during project implementation. Monitoring of the implementation of adopted mitigation measures is required by Public Resources Code Section 21081.6.

The Mitigation Negative Declaration (MND), SCH No. 2012032050, recommends that the Port of Oakland adopt a range of mitigation measures that will mitigate to the extent feasible the environmental effects that could result from the implementation of the project. This MMRP identifies mitigation measures of the MND, and describes the process whereby the mitigation measures would be monitored.

PURPOSE

The purpose of this MMRP is to ensure compliance with all mitigation measures identified in the MND to mitigate or avoid potentially significant adverse environmental impacts resulting from the project. Implementation of this MMRP shall be accomplished by the Port of Oakland. Project-specific mitigation measures will be implemented (1) as part of design development of the project, (2) during project construction, or (3) as part of project operations.

FORMAT

The MMRP is organized in a table format (see Table 1), keyed to each significant impact and each MND mitigation measure. Each mitigation measure is set out in full, followed by a tabular summary of monitoring requirements. The column headings in the tables are defined as follows:

- **Mitigation Measures adopted as Conditions of Approval:** This column presents the mitigation measure identified in the MND.
- **Implementation Procedures:** This column identifies the procedures associated with implementation of the migration measure.
- **Monitoring Responsibility:** This column contains an assignment of responsibility for the monitoring and reporting tasks.
- **Monitoring and Reporting Action:** This column presents the steps for implementing and documenting compliance with the mitigation measure.

- **Mitigation Schedule:** This column presents the general schedule for conducting each mitigation task, identifying where appropriate both the timing and the frequency of the action.

- **Verification of Compliance:** This column will be used by the lead agency to document who verified the implementation of the mitigation measure, and the date on which this verification occurred.

RESPONSIBILITIES AND DUTIES

Monitoring will consist of demonstrating that mitigation measures were implemented, and that the responsible entity monitored the implementation of the measures. The responsible entity for determining compliance with all mitigation measures will be the Port of Oakland. Monitoring will consist of determining the following:

- The specific issues identified in the mitigation measures were considered in the design development phase.

- Construction contracts included the provisions specified in the mitigation measures.

- Implementation of the mitigation measures have been accurately documented, including corrective actions and completion of activities.

Table 1
Mitigation Monitoring and Reporting Program Matrix

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Air Quality					
Mitigation Measure AQ-1, Fugitive Dust Control Measures: The construction contractor shall reduce construction-related air pollutant emissions by implementing BAAQMD's basic fugitive dust control measures (BAAQMD, 2010a, Table 8-3) that will be identified in their Dust Control submittal to the Port. Therefore, the Proposed Project shall include the following requirements in construction contracts: · All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved vehicle service roads) shall be watered as necessary with recycled water, · All haul trucks transporting soil, sand, or other loose material off site shall be covered with a tarp to prevent discharge of this material to roadways, · All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. · All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. · A publically visible sign shall be posted with the telephone number the Port Resident Engineer to contact regarding dust complaints. This person shall respond and take all corrective actions necessary within 48 hours to prevent fugitive dust emissions. The Air District's telephone number shall also be visible to ensure compliance with applicable regulations. · Idling times of construction equipment shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, California Code of Regulations Section 2485). The contractor will be required to submit an air pollution control plan prior to the start of construction activities. Clear signage shall be provided for construction workers at all access points. · All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All diesel-powered off-road construction vehicles and diesel powered equipment used on the project must be registered in CARB's Diesel Off-Road On-Line Reporting System (DOORS), and have appropriate placards on trucks showing compliance.	Port shall include the fugitive dust control measures in the contract documents.	BAAQMD Port	Inspect the construction site to verify that fugitive dust control measures are enacted. Document compliance or report noncompliance, and ensure corrective action.	Before construction; inspect during construction.	*Verified by:* *Date:*

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Biological Resources					
Mitigation Measure BO-1, Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat: A qualified biologist shall monitor all construction activities in suitable salt marsh habitat within the project site. A qualified biologist will look for any listed species (i.e., salt marsh harvest mouse, California black rail, and Ridgeway's rail) during all construction activities in suitable habitat. If any listed species is encountered during project construction, all work that could result in direct injury, disturbance, or harassment of the individual animal shall immediately cease, and the foreman and qualified biologist shall be immediately notified. The qualified biologist shall monitor the location until he/she determines that the animal(s) are not imperiled by predators or other dangers. The qualified biologist shall notify the USFWS following any personal encounters with a listed species during construction within 1 working day via email or telephone.	Port shall contract with qualified consulting biologist(s) to implement the construction activities monitoring.	Port	Monitor construction activities in suitable salt marsh habitat within the project site. Document compliance or report noncompliance, and ensure corrective action.	During construction.	*Verified by:* *Date:*
Mitigation Measure BO-2, Environmental Awareness Training: A qualified biologist shall conduct environmental awareness training for all construction crews and contractors working in special-status species habitats (e.g., non-tidal wetlands and muted tidal wetlands) before initiating work on the Proposed Project. The training shall include a brief review of all the special-status species and other sensitive resources that may exist in the study area, including the field identification and the habitat requirements of each species; the locations of sensitive biological resources; the legal status and protection of each species; the Proposed Project's avoidance and minimization measures; environmental permits; and regulatory compliance requirements. New workers who arrive after the start of construction shall be trained as needed by a designated onsite supervisor. Additional training shall be conducted as needed, including morning "tailgate" sessions, to update crews as the work progresses. A record of all personnel trained during the Proposed Project shall be maintained, and this record shall be made available for compliance verification. In addition, training materials, written documentation, photographs, and/or interpretive signs shall be provided to the work crew by the Port's contractor with details on sensitive resources, resource avoidance, permit conditions, and possible fines for violations of state or federal environmental laws.	Port shall contract with qualified consulting biologist(s) to implement training. Qualified consulting biologist(s) shall develop and conduct a training program for construction personnel.	Port	Retain a copy of training materials and attendance lists for all workers who participate in the training program. Document compliance or report noncompliance, and ensure corrective action.	Before and during construction.	*Verified by:* *Date:*

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Mitigation Measure BO-3 Conduct Pre-Construction Surveys: A pre-construction survey for any protected species shall be conducted 30 days prior to the start of construction activities. In the unlikely event that a protected species is in the study area, the Port shall implement measures (such as implementing a construction buffer around the area, having a qualified biologist onsite, or waiting for the species to passively leave the area) to avoid impacts.	Port shall contract with qualified consulting biologist(s) to implement the required surveys. Qualified consulting biologist(s) shall provide needed restriction measures such as implementing construction buffer zones. Qualified biologist shall monitor seasonal restrictions and buffer zone measures.	Port	Ensure that measures resulting from the survey are included in the contract documents. Document compliance with this mitigation requirement. Inspect construction site to confirm work restrictions and buffer zones; document compliance or report noncompliance, and ensure corrective action. Monitor to ensure that contractor(s) implement measures as specified in contract documents; document compliance or report noncompliance, and ensure corrective action.	30 days before construction; inspect during construction.	*Verified by:* *Date:*
Mitigation Measure BO-4, Offsite Mitigation for Wetlands and Other Waters: The Proposed Project would result in the loss of up to 5.26 acres of jurisdictional wetlands and other waters of the U.S. (Figure 3-1). Any compensatory mitigation would need to be provided offsite, because placing mitigation areas onsite at OAK to compensate for wetland effects would be inconsistent with the following federal regulations and guidelines: · Memorandum of Agreement between the FAA, the United States Air Force, the United States Army, the U.S. EPA, the USFWS, and the United States Department of Agriculture to Address Aircraft-Wildlife Strikes (2003), which established procedures to address existing and future environmental conditions contributing to aircraft-wildlife strikes. · FAA Advisory Circular 150/5200 33B, Hazardous Wildlife Attractants on or Near Airports, which recommends a minimum separation distance of 10,000 feet between aircraft operations areas of airports serving turbine jet aircraft, and hazardous wildlife attractants; and recommends a distance of 5 statute miles between the airport operations area and hazardous wildlife attractants, if the attractant could cause hazardous wildlife movement into or across the airport's approach or departure airspace. · FAA regulations (14 CFR 139.337) regarding certification of commercial service airports, which require that OAK, as a commercial service airport, alleviate wildlife-aircraft collision strike hazards. · USACE regulations (33 CFR Part 332.3[b][1]) regarding compensatory mitigation for losses of aquatic resources, which state that compensatory mitigation projects should not be located where they will increase risks to	Port shall finalize the purchase of wetlands and waters of the U.S. mitigation credits from the Bank at the ratios indicated in the mitigation measure.	USACE and Port	Monitor and report implementation of the compensation measures.	Before construction	*Verified by:* *Date:*

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
aviation by attracting wildlife to areas where aircraft-wildlife strikes may occur. The selected offsite mitigation will provide benefits to sensitive non-tidal and muted tidal wetlands above and beyond the value provided at OAK. Specific benefits would include providing contiguous habitat with functional linkages to existing populations that would be preserved in perpetuity and managed for the benefit of species. The U.S. EPA and USACE's Wetlands Mitigation Rule (Mitigation Rule) requires replacement of the loss of wetland acreage and functions from fill of wetlands through compensatory mitigation, but does not allow compensatory mitigation in locations that may create a wildlife-aircraft strike hazard (USACE, 2008). The Port has identified the following proposed offsite compensatory mitigation to ensure that there is no net loss of wetland habitat, which would reduce impacts to a less-than-significant level. This mitigation package will be reviewed and further refined by the regulating resource agencies; in particular, USACE and the RWQCB, as part of the respective Section 404 and 401 permitting processes under the CWA. Requirements for Mitigation for Loss to Aquatic Resources. The CWA prohibits the discharge of dredged or fill material into wetlands, streams, and waters of the U.S., unless a Section 404 permit is issued by the USACE, and a Section 401 Water Quality Certification is issued from the state in which the discharge originates (33 USC 1344). Implementation of the Proposed Project will require an individual Section 404 Permit from the USACE San Francisco Bay District, and a Section 401 Water Quality Certification from the RWQCB. Under the guidance of the U.S. EPA and USACE's Mitigation Rule, proposed dischargers are required to replace lost wetland acreage and functions by providing compensatory mitigation through aquatic resource restoration, establishment, enhancement, and in certain circumstances, preservation. The Mitigation Rule encourages the use of mitigation banks to reduce many risks and uncertainties associated with compensatory mitigation. In addition, the proposed mitigation will conform to the RWQCB's San Francisco Bay Region (Region 2) Water Quality Control Plan, and "Fact Sheet for Reviewing Wetland and Riparian Projects" by the San Francisco RWQCB. The project sponsor will work with the USACE and RWQCB to ensure that the proposed compensation complies with federal and State regulations and policies, as described above. Proposed Compensatory Wetland and Waters Mitigation. The Port will provide mitigation to ensure that there is no net loss of wetlands from the Proposed Project. The Port has identified potential offsite mitigation to compensate for the loss of wetlands and waters of the U.S. Potential mitigation sites were evaluated based on the following selection criteria: · Schedule Risks (i.e., ability to create wetlands in conjunction with the Proposed Project construction schedule); · Location (i.e., proximity to the Airport; and whether the proposed mitigation site is located in the same drainage area as OAK);					

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
· Capacity (i.e., available acreage of wetlands); and · Ecological functions of the wetlands at the mitigation site. The selected mitigation site will enhance the wetland complex in the San Francisco Bay Area by providing at least a 1:1 replacement ratio for permanently impacted wetlands. Monitoring performance criteria and reporting requirements will be established in compliance with the USACE's Section 404 Permit, and the RWQCB's Section 401 Water Quality Certification and Waste Discharge Requirements. The example wetland and waters mitigation site described below also has the potential to provide habitat for federally listed species, such as the Ridgway's rail and others, and could feasibly meet the Port's goal of no net loss of wetlands associated with the Proposed Project. *Example Mitigation Site: San Francisco Bay Wetland Mitigation Bank* Located approximately 10.5 miles south of OAK in Redwood City, the Bank was approved by the U.S. EPA and USACE in August 2011. The 88-acre restoration site, historically tidally influenced and hydrologically connected to Belmont Slough, was diked in the early part of the twentieth century for future urban and commercial development. Prior to restoration, the area contained uplands and some non-tidal wetlands. The site is now restored to full tidal action, with upland refugia habitat such as pickleweed, California cordgrass, and salt grass.					
Hazards and Hazardous Materials					
Mitigation Measure HZ-1, Hazardous Material Handling Documentation: During construction, hazardous materials (i.e., fuel, waste oil, solvents, paint, and other hydrocarbon-based products) would be used in quantities that are typical of the construction industry. The Port shall require the contractor to comply with the safety and environmental submittals detailed in Section 01340 of the Port's contracts documents for contractors' submittals. The construction contract documents shall require that these materials be identified in an inventory, that current Material Safety Data Sheets be available on site, and that the hazardous materials be stored, labeled, and disposed of in accordance with applicable regulations. The contractor shall be held responsible for reporting any release of hazardous materials or other similar substances (in amounts above their reportable quantities).	Port and its contractor(s) shall incorporate hazardous materials and spill prevention measures into the SWPPP, which shall then be incorporated into the contract documents.	Port	Verify incorporation of hazardous materials and spill prevention measures into the SWPPP. Verify incorporation of the SWPPP into construction and grading plans.	Before construction.	*Verified by:* *Date:*
Mitigation Measure HZ-2, Active Fuel Pipelines Hazards: Prior to performing boring tests to determine treatment depths and in-situ soil treatment associated with the Proposed Project, the exact locations of the two active fuel pipelines shall be verified. Furthermore, a survey of the existing conditions, an optical survey of the pipelines, and a survey of the background levels of vibration shall be performed before construction begins. During construction, vibration levels and monitoring of the pipeline displacement using optical surveying, settlement monitors, or borehole extensometers shall be performed.	Port and its contractor(s) shall incorporate in the contract documents the specifications for optical survey. Port and its contractor(s) shall include pipeline monitoring tests	Port	Inspect the construction site to verify that pipes surveys, monitoring and Action Plan are enacted. Document compliance or report noncompliance, and ensure corrective action.	Before and during construction.	*Verified by:* *Date:*

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
In addition, a test section shall be performed at a location of the sand dike without pipelines prior to installation of in-situ soil improvement adjacent to the pipelines, to demonstrate that the in-situ soil improvement methods and procedures being used would not damage the pipelines. A dummy pipeline shall be installed in the test section to demonstrate that the improvement methods will not damage the pipelines. The Port, its contractor and SFPP/ KMEP shall develop an Action Plan for construction activities near the pipelines, and shall monitor in-situ soil treatment adjacent to the active fuel pipelines, and provide and respond immediately to shut down the pipelines in the event of a rupture. After construction is complete, a final conditions survey of the pipelines shall be conducted to ensure that the pipelines have not been damaged.	requirements in the contract documents. Port and its contractor(s) shall include the Action-Plan requirement in the contract documents. Port and its contractor(s) shall include the final conditions survey in the contract documents.				
Mitigation Measure HZ-3, Contaminated Soils and/or Groundwater: Previous excavation activities along the perimeter dike by Shell Pipeline and the Port have not encountered contaminated soils or groundwater, and there is no record of the pipelines leaking along the perimeter dike. However, if contamination is encountered during construction, the Port shall ensure that the contractor's Soil and Groundwater Management Plan has provisions for the handling, storage, treatment, and/or testing and disposal of hazardous materials, contaminated soil, and/or groundwater in accordance with federal, state, and local regulations.	Port and its contractor(s) shall incorporate in the contract documents the provisions for handling, storage, treatment, and/or testing and disposal of hazardous materials, contaminated soil, and/or groundwater in accordance with relevant regulations.	Port	Verify incorporation of measures associated with soils and/or groundwater into the contract documents.	Before construction.	*Verified by:* *Date:*

Table 1
Mitigation Monitoring and Reporting Program Matrix (Continued)

Mitigation Measures Adopted as Conditions of Approval	Implementation Procedures	Monitoring Responsibility	Monitoring and Reporting Action	Monitoring Schedule	Verification of Compliance
Recreation					
Mitigation Measure RE-1, Bay Trail Detour Plan and Access: In the event the Bay Trail would need to be closed during construction, the Port, in coordination with BCDC, the cities of San Leandro and Oakland, and the Association of Bay Area Governments, ~~the Port~~ shall identify a temporary alternate route for the Bay Trail that will connect the Bay Trail to the south of the closure at Bill Lockyer Bay Trail Bridge with the Bay Trail to the north of the bridge, outside of the construction area for the project. The Bay Trail alternate route may include Polvorosa Avenue, William Street, Neptune Drive, and Doolittle Drive ~~shall extend from Oyster Bay Regional Shoreline Park to Doolittle Drive. The temporary route shall generally follow Davis Street (heading north) and Doolittle Drive (heading west). These streets are designated as scenic routes in the City of San Leandro General Plan. In addition, the City of San Leandro in its General Plan identifies Doolittle Drive as a bikeway.~~ The alternate route shall be developed to protect the safety of trail users from potential conflicts, including with the construction access routes for the project. Temporary signage shall be installed to direct trail users along the alternate route. In the event that construction activities would only require crossing the Bay Trail and no need for the trail closure, a flag person would be stationed at each end of the Bill Lockyer Bay Trail Bridge to control public access and construction traffic crossing the trail. Access to the Bay Trail shall be maintained each day after construction hours.	Port, ~~and~~ BCDC, the cities of San Leandro and Oakland, and the Association of Bay Area Governments shall identify alternate Bay Trail route. Port and its contractor(s) shall include the development of the alternate Bay Trail route and the temporary signage in the contract documents. Port and its contractor(s) shall incorporate in the contract documents the provisions for having a flag person to control public access stationed at each end of the Bill Lockyer Bay Trail Bridge, as needed.	BCDC and Port	Verify incorporation of development of alternate Bay Trail route and temporary signage into contract documents. Monitor to ensure that contractor(s) implement measures as specified in contract documents; document compliance or report noncompliance, and ensure corrective action.	Before construction. Inspect during construction.	Verified *by:* *Date:*

Notes:

BAAQMD = Bay Area Air Quality Management District
BCDC = San Francisco Bay Conservation and Development Commission
CFR = Code of Federal Regulations
CWA = Clean Water Act
DOORS = CARB's Diesel Off-Road On-Line Reporting System
FAA = Federal Aviation Administration
OAK = Oakland International Airport
Port = Port of Oakland
RWQCB = Regional Water Quality Control Board
SFPP/KMEP = SFPP, L.P./Kinder Morgan Energy Partners, L.P.
SWPPP = storm water pollution prevention plan
USACE = U.S. Army Corps of Engineers
USC = United States Code
U.S. EPA = U.S. Environmental Protection Agency
USFWS = U.S. Fish and Wildlife Service

REFERENCES

CNRA (California Natural Resources Agency), 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. State of California, Department of Fish and Game. November 24.

ISP (Invasive Spartina Project), 2012. California Clapper Rail Habitat Enhancement, Restoration and Monitoring Plan. California State Coastal Conservancy, Oakland, CA. January.

Raabe, Andrew, 2011. Personal communication through electronic mail between Andrew Raabe, USFWS representative, and Colleen Liang, Port of Oakland Environmental Scientist, regarding bird surveys and breeding seasons. May 12.

The California Burrowing Owl Consortium, 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April.

URS (URS Corporation), 2000. Port of Oakland. Emergency Plan of Action for Discoveries of Unknown Historic or Archaeological Resources. February.

USACE (U.S. Army Corps of Engineers), 2008. Compensatory Mitigation for Losses of Aquatic Resources, Final Rule. Federal Register Vol. 73, No. 70 (pp. 19594-19705). April 10.

Appendix C

Public Comments Received during the Public Review Period and Responses

Douglas Herman

From: Liao, Thomas <TLiao@sanleandro.org>
Sent: Thursday, October 08, 2015 6:01 PM
To: Douglas Herman
Cc: Battenberg, Cynthia; Pollart, Debbie; Wilson, Dean; Cooke, Keith
Subject: comments on draft is/mnd for proposed airport perimeter dike fema and seismic improvements project

Hi Douglas,

Below are the City of San Leandro's comments to the draft Initial Study/Mitigated Negative Declaration for the proposed airport perimeter dike improvements.

- PG 2.5.1 Raising Dike Crest: Address the flood control channel crossing (station 0), raising will require improvements to existing structure to maintain roadway and drainage.

- PG 3-42 Accidental Spills: The Mitigation Measure HZ-2 is inadequate along with the pipeline stress analyses. Although the limits of pipeline stress are reached at a larger lateral displacements, there is now a reduction in the factor of safety for the pipeline for movement. The pipeline should be modified to provide for these displacements so that safety factors remain the same.

- PG 3-69 Impacts to Public Services: The document does not address the impacts to Water Pollution Control Plant Operations during construction and whether dike improvements would hinder maintenance operation in the future. Also, any construction impacts to use of the Water Pollution Control pond road (stations 0 – 15) would require coordination and approval of the City of San Leandro.

- PG 3-74 Mitigation Measure RE-1 Bay Trail Detour Plan: Coordination with BCDC is insufficient as they do not have control over the roadways away from the shoreline. Coordination is required with the City of San Leandro and City of Oakland for the Bay Trail Detour Plan. Additionally Davis Street is not appropriate for the detour and it is recommended that Bay Trail traffic be diverted to either Polvorosa Avenue or Williams Street and then on to Neptune Drive.

Thank you for the opportunity to comment. Please feel free to contact me if you have any questions on our comments.

Tom Liao, Deputy Community Development Director
City of San Leandro Community Development Dept.
835 East 14th St.
San Leandro, CA 94577
510-577-6003 (office)
510-577-6007 (fax)
e-mail: tliao@sanleandro.org
www.sanleandro.org

PORT OF OAKLAND

November 4, 2015

Tom Liao
Deputy Community Development Director
City of San Leandro
835 East 14th Street
San Leandro, CA 94577

Subject: **Response to Comments**
Draft Initial Study/Mitigated Negative Declaration
Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport

Dear Mr. Liao,

The Port of Oakland is in receipt of your comments on the Draft Initial Study/Mitigated Negative Declaration ("IS/MND") for the Airport Perimeter Dike FEMA and Seismic Improvements Project ("Project") that were transmitted via email dated October 8, 2015. The Port also met with staff from the City of San Leandro on November 2, 2015, to discuss in further detail your comments on the IS/MND, and any other concerns regarding the Project. The following is a list of your comments and the response by the Port of Oakland:

Comment: PG 2.5.1 Raising Dike Crest: Address the flood control channel crossing (station 0); raising will require improvements to existing structure to maintain roadway and drainage.

Port Response: The final design of the improvements to the San Leandro portion of the dike will not cross the flood control channel. The improvements will instead be the addition of up to 1.5 feet of fill on the dike as shown on the enclosed 100 Percent Design Drawing C1 and C14. As also confirmed in our meeting of November 2, 2015, the Port contractor will ensure that there is a smooth transition from the Water Pollution Control Plant driveway crossing the flood control channel to the perimeter dike.

Comment: PG 3-42 Accidental Spills: The Mitigation Measure HZ-2 is inadequate along with the pipeline stress analyses. Although the limits of pipeline stress are reached at larger lateral displacements, there is now a reduction in the factor of safety for the pipeline for movement. The pipeline should be modified to provide for these displacements so that safety factors remain the same

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone: (510) 627-1100 ■ Facsimile: (510) 627-1826 ■ Web Page: www.portofoakland.com

Port Response: The project team will revise the subject sentence (PG 3-42, Paragraph 4, Line 10) in the final draft of the IS/MND to clarify the following: The buried pipelines will not be subject to 1 to 1.4 feet of horizontal and vertical movements, respectively, as a result of the Project. The buried pipelines would be subjected to seismic-induced deformations (both vertical and horizontal) as a result of an earthquake. The Project would reduce the overall deformation of the dike for the designed earthquake. The Project would not result in causing additional seismic-induced deformations to the pipelines.

Comment: PG 3-69 Impacts to Public Services: The document does not address the impacts to Water Pollution Control Plant Operations during construction and whether dike improvements would hinder maintenance operations in the future. Also, any construction impacts to the Water Pollution Control pond road (stations 0 – 15) would require coordination and approval of the City of San Leandro.

Port Response: The Port understand that improvements to the San Leandro portion of the perimeter dike and at the Water Pollution Control Plant driveway to the perimeter dike will require coordination with City of San Leandro. Access for the improvements would be from the dike west of the Water Pollution Control Plant and should thus have minimal impact on plant operations during construction. The improvements are anticipated to require 1 to 2 weeks to complete. The dike improvements shown on 100 Percent Design Drawing C1 and C14 should not hinder future maintenance operations.

Comment: PG 3-74 Mitigation Measure RE-1 Bay Trail Detour Plan: Coordination with BCDC is insufficient as they do not have control over the roadways away from the shoreline. Coordination is required with the City of San Leandro and City of Oakland for the Bay Trail Detour Plan. Additionally Davis Street is not appropriate for the detour and it is recommended that Bay Trail traffic be diverted to either Polvorosa Avenue or Williams Street and then on to Neptune Drive.

Port Response: It is not anticipated that the bay trail will need to be closed during construction activities on the perimeter dike. If the bay trail must be closed, the Port will meet with the City of the San Leandro, Oakland, and ABAG to develop a detour plan that is satisfactory to all, including, diverting the bike traffic to Polvorosa Avenue or Williams Street on to Neptune Drive and then to Doolittle Drive. If the bay trail does not need to be closed, but construction traffic will need to cross the trail near the Bill Lockyer Bay Trail Bridge, a flag person will be stationed at each end of the bridge to control bike and truck traffic so that there are no bike/truck interactions.

I hope that the responses provided above are satisfactory. Please contact me at 510-627-1184 or dherman@portoakland.com if you have any further questions.

Sincerely,

Douglas P. Herman
Port Environmental Scientist

Cc w/attachment: Brandon Mark, Manager, Airport Properties
Joshua Polston, Aviation Project Manager
Dean Wilson, Director of the Water Treatment Plant, City of San Leandro
Keith Cooke, Director of Engineering, City of San Leandro
Michael Stella, Principal Engineer, City of San Leandro
Kathy Ornelas, Community Development, City of San Leandro

Douglas Herman

From: Ornelas, Kathy <kornelas@sanleandro.org>
Sent: Thursday, November 05, 2015 2:21 PM
To: Douglas Herman; Stella, Michael; Cooke, Keith; Wilson, Dean; Liao, Thomas
Cc: Joshua Polston; Brandon Mark; Diane Heinze; Vincent Chu; Arulnathan, Rajendram; Ghannam, Rima; Richard Sinkoff
Subject: Re: Response to Comments

Doug - my only other comment is the need for the Port's commitment to keep the Bay Trail safe and passable after hours for public use of the trail.
Thanks
Kathy O.

From: Douglas Herman <dherman@portoakland.com>
Sent: Wednesday, November 4, 2015 3:36 PM
To: Stella, Michael; Cooke, Keith; Wilson, Dean; Liao, Thomas; Ornelas, Kathy
Cc: Douglas Herman; Joshua Polston; Brandon Mark; Diane Heinze; Vincent Chu; Arulnathan, Rajendram; Ghannam, Rima; Richard Sinkoff
Subject: Response to Comments

Mr. Liao,

Please see attached the response to comments that you provided to the Port of Oakland on October 8, 2015, in regards to the Initial Study/Mitigated Negative Declaration for the Airport Perimeter Dike FEMA and Seismic Improvements Project. Please also see attached Drawing C1 and C14 from the 100% Plan Set for the project, which are referenced in our response letter. Please let me know if you have any questions....thanks

Douglas Herman
Environmental Scientist
530 Water Street
Oakland, CA 94607
Office 510-627-1184
Cell 510-773-9990
Fax 510-465-3755
dherman@portoakland.com

Douglas Herman

From: Douglas Herman
Sent: Friday, November 06, 2015 9:16 AM
To: Ornelas, Kathy; Stella, Michael; Cooke, Keith; Wilson, Dean; Liao, Thomas
Cc: Joshua Polston; Brandon Mark; Diane Heinze; Vincent Chu; Arulnathan, Rajendram; Ghannam, Rima; Richard Sinkoff; Douglas Herman
Subject: RE: Response to Comments

Thank you, Kathy.

Rima,

Please finalize the Initial Study/Mitigated Negative Declaration for the Airport Perimeter Dike FEMA and Seismic Improvements Project, and add to it my letter with San Leandro's comments and our response. Please add a follow-up statement after my letter with Kathy's comment and our response: "we will keep the Bay Trail safe and passable after hours for public use of the trail."...thanks

---

From: Ornelas, Kathy [mailto:kornelas@sanleandro.org]
Sent: Thursday, November 05, 2015 2:21 PM
To: Douglas Herman; Stella, Michael; Cooke, Keith; Wilson, Dean; Liao, Thomas
Cc: Joshua Polston; Brandon Mark; Diane Heinze; Vincent Chu; Arulnathan, Rajendram; Ghannam, Rima; Richard Sinkoff
Subject: Re: Response to Comments

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Thanks
Kathy O.

From: Douglas Herman <dherman@portoakland.com>
Sent: Wednesday, November 4, 2015 3:36 PM
To: Stella, Michael; Cooke, Keith; Wilson, Dean; Liao, Thomas; Ornelas, Kathy
Cc: Douglas Herman; Joshua Polston; Brandon Mark; Diane Heinze; Vincent Chu; Arulnathan, Rajendram; Ghannam, Rima; Richard Sinkoff
Subject: Response to Comments

Mr. Liao,

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Douglas Herman
Environmental Scientist

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

2015 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# 2123104.

STATE CLEARING HOUSE # *(If applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY
PORT OF OAKLAND ENVIRONMENTAL PROGRAMS AND PLANNING DIVISION

DATE
12/18/2015

COUNTY/STATE AGENCY OF FILING
Alameda

DOCUMENT NUMBER
15-444

PROJECT TITLE
AIRPORT PERIMETER DIKE FEMA AND SEISMIC IMPROVEMENTS PROJECT

PROJECT APPLICANT NAME
PORT OF OAKLAND ENVIRONMENTAL PROGRAMS AND PLANNING DIVISION

PHONE NUMBER
(510) 627-1100

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
530 WATER ST	OAKLAND	CA	94607

PROJECT APPLICANT *(Check appropriate box):*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,069.75	$	0.00
☒ Mitigated/Negative Declaration (MND)(ND)	$2,210.00	$	2,210.00
☐ Application Fee Water Diversion *(State Water Resources Control Board only)*	$850.00	$	0.00
☐ Projects Subject to Certified Regulatory Programs (CRP)	$1,043.75	$	0.00
☒ County Administrative Fee	$50.00	$	50.00
☐ Project that is exempt from fees			
☐ Notice of Exemption (attach)			
☐ CDFW No Effect Determination (attach)			
☐ Other _____		$	

PAYMENT METHOD:

☐ Cash ☒ Credit ☐ Check ☐ Other _____ TOTAL RECEIVED $ 2,260.00

SIGNATURE
X C. Orogo

PRINTED NAME AND TITLE
C. OROGO / DEPUTY CLERK

ALAMEDA COUNTY CLERK-RECORDER
1106 MADISON STREET
OAKLAND, CA 94607
(510)272-6362

ISSUED TO:PORT OF OAKLAND

RECEIPT # 2123104
12/18/2015 10:11:56 AM

SERVICE	PAGES	QTY	FEE
GENERAL BUS 1		1	2,260.00

Total Amount Due $2,260.00

CHECK 615892 2,260.00

Total Payments: $2,260.00

STEVE MANNING
CLERK RECORDER
Deputy: OROGOC

Custom

ENDORSED
FILED
ALAMEDA COUNTY

DEC 18 2015

STEVE MANNING, County Clerk
By _____ Deputy

*ENVIRONMENTAL DECLARATION

(CALIFORNIA FISH AND GAME CODE SECTION 711.4)

LEAD AGENCY NAME AND ADDRESS	FOR COUNTY CLERK USE ONLY
Port of Oakland 530 Water Street Oakland, CA 94607 applicant: Cory McCollow - Backyard Oakland	FILE NO: 15-444

CLASSIFICATION OF ENVIRONMENTAL DOCUMENT:

(PLEASE MARK ONLY ONE CLASSIFICATION)

1. NOTICE OF EXEMPTION / STATEMENT OF EXEMPTION

☐ A - STATUTORILY OR CATEGORICALLY EXEMPT

$ 50.00 - COUNTY CLERK HANDLING FEE

2. NOTICE OF DETERMINATION (NOD)

☑ A - NEGATIVE DECLARATION (OR MITIGATED NEG. DEC.)

$ 2,210.00 - STATE FILING FEE

$ 50.00 - COUNTY CLERK HANDLING FEE

☐ B - ENVIRONMENTAL IMPACT REPORT (EIR)

$ 3,069.75 - STATE FILING FEE

$ 50.00 - COUNTY CLERK HANDLING FEE

***A COPY OF THIS FORM MUST BE COMPLETED AND SUBMITTED WITH EACH COPY OF AN ENVIRONMENTAL DECLARATION BEING FILED WITH THE ALAMEDA COUNTY CLERK.**

FOUR (4) COPIES OF ALL NECESSARY DOCUMENTS ARE REQUIRED FOR FILINGS SUBMITTED BY MAIL. FIVE (5) COPIES ARE REQUIRED FOR IN-OFFICE FILINGS.

ALL APPLICABLE FEES MUST BE PAID AT THE TIME OF FILING.

FEES ARE EFFECTIVE JANUARY 1, 2015

MAKE CHECKS PAYABLE TO: ALAMEDA COUNTY CLERK

NOTICE OF DETERMINATION

TO: _____Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

_____County Clerk
County of Alameda
1106 Madison
Oakland, CA 94607

FROM: Port of Oakland
Environmental Programs and
Planning Division
530 Water St.
Oakland, CA 94607-3798

STATE CLEARINGHOUSE NO: 2015092045

SUBJECT: Filing of Notice of Determination in compliance with Section 21152 of the Public Resources Code.

PROJECT TITLE: Airport Perimeter Dike FEMA and Seismic Improvements Project

PROJECT LOCATION: 1 Airport Drive, Oakland International Airport, Oakland, Alameda County, CA, 94607

PROJECT DESCRIPTION: The Proposed Project is being undertaken by the Port in response to FEMA requirements for the certification of the perimeter dike for 100-year flood protection, and to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake. The main improvements to the perimeter dike include the following:

- Raising the crest of the dike above the 10-foot elevation of the Stillwater Level (SWL)[1] by approximately 3 feet with 2 feet for freeboard[2] and approximately 1 foot for sea-level rise.
- Raising the crest structure to an elevation of the 100-year Total Water Level (TWL),[3] plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise. For the areas where raising the crest structure would not be feasible, the dike would be armored through the installation of riprap.
- Controlling through-seepage by constructing a soil-cement block, a seepage cutoff wall, or a drainage system along a portion of the perimeter dike.
- Improving the inboard slope of the dike by installing stability berms or shear panels.
- Improving seismic performance of the sand portion of the dike by installing stone columns or a soil-cement block.

---

[1] Stillwater is the flood level that does not include the effects of waves (wave amplitude and wave setup).
[2] Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected-size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.
[3] 100-year Total Water Level = Stillwater Level (or the flood level without the effects of waves) + wave runup.

ENDORSED
FILED
ALAMEDA COUNTY

DEC 18 2015

STEVE MANNING, County Clerk
By _____ Deputy

This is to advise that the Port of Oakland has adopted the Initial Study/Mitigated Negative Declaration for the described project above and has made the following determinations:

1. The project ☐will, ☑ will not, have a significant effect on the environment with the implementation of mitigation measures.

2. ☐An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.

   ☑A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

3. Mitigation measures ☑ were, ☐were not, made a condition of the approval of the project.

4. A mitigation reporting or monitoring plan ☑was, ☐ was not, adopted for this project.

5. A Statement of Overriding Considerations ☐was, ☑ was not, adopted for this project.

6. Findings ☑ were, ☐were not, made pursuant to the provisions of CEQA (14 California Code of Regulations Section 15091).

This is to certify that the record of adoption of the Initial Study and Mitigated Negative Declaration for the Proposed Project may be examined by the general public at the Port of Oakland, Environmental Programs and Planning Division, 530 Water Street, Oakland, CA. 94607.

Diane Heinze
Environmental Programs and Planning

12/10/15
Date

Board of Port Commissioners, Item No. 2.4

Board Date: December 17, 2015

Addendum to the
Initial Study/Mitigated Negative Declaration

For the South Field Perimeter Dike Improvement Project
At Oakland International Airport

(SCH No. 2015092045)

Prepared by the Port of Oakland

September 2017

TABLE OF CONTENTS

page

Attachments

1.0 PROJECT DESCRIPTION

1.1 Introduction

On December 17, 2015, the Board of Port Commissioners, acting on behalf of the Port of Oakland ("Port"), adopted the Airport Perimeter Dike FEMA and Seismic Improvement Project ("APD Project") Initial Study/Mitigated Negative Declaration ("2015 APD IS/MND") (URS, 2015b). The 2015 APD IS/MND evaluated the potential impacts associated with the implementation of the APD Project. Since the adoption, the APD Project has been restructured to deliver the improvements in two phases, in order to align available funding with the anticipated costs of the improvements. Phase 1 will complete construction of flood protection measures and meet standards required by the Federal Emergency Management Administration ("FEMA") to certify the dike. Phase 2 will construct improvements necessary to protect the dike from catastrophic damage during a major earthquake.

Subsequent revisions to the design of the APD identified additional areas of impacts to wetlands and other waters of the US. The revisions to the APD Project is the subject of this addendum to the 2015 APD IS/MND.

1.2 Project Improvements

The APD Project is being undertaken by the Port in response to FEMA requirements for the certification of the perimeter dike for 100 year flood protection, to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake, and to address future seal level rise. The main improvements to the perimeter dike, as described in the 2015 APD IS/MND, include the following:

- Raising the crest of the dike above the 10 foot elevation of the Stillwater Level (SWL) by approximately 3 feet—with 2 feet for freeboard and approximately 1 foot for sea-level rise.
- Raising the crest structure to an elevation of the 100 year Total Water Level (TWL), plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise. For the areas where raising the crest structure would not be feasible, the dike would be armored through the installation of riprap.
- Controlling through-seepage by constructing a soil-cement block, a seepage cutoff wall, or a drainage system along a portion of the perimeter dike.
- Improving the inboard slope of the dike by installing stability berms.
- Improving seismic performance of the sand portion of the dike by installing stone columns or a soil-cement block.

2.0 CHANGES IN THE PROJECT DESCRIPTION

As noted above, the Project design was revised to include improvements at certain locations along the South Field perimeter dike, which changed the project area. Table 1 summarizes the locations and the revisions since the adoption of the 2015 APD IS/MND. Most of the revisions are due to design

requirements necessitating a larger berm footprint. Figures showing the location of the Project and proposed revisions are included in Attachment A.

The following describes the changes in two sections in greater detail.

2.1 Station 54+00 to 75+00 - Shear Panel vs Stability Berm

The previous design of the perimeter dike improvements (URS, 2015a) included the use of deep soil mix (DSM) shear panels between Stations 54+00 and 75+00 to increase the landside long term stability to the minimum factor of safety required to obtain FEMA certification. The use of shear panels was based on an alternative evaluation performed for the 60 percent design (URS, 2014) and included assumptions that the shear panels would be constructed during the same period that seismic improvement to the sand dike portions of the perimeter dike were occurring, requiring a relatively smaller volume of DSM compared to volume of DSM required for seismic improvements. In addition, the previous alternative analyses assumed that fill material for the stability berm would need to be imported.

Subsequent to completion of the 100 percent design, the improvements at this area were reviewed again and the Port determined that installation of a stability berm, not shear panels, was the most feasible option based on cost and constructability. Material for the stability berm would be generated from the Port's onsite Material Management Site, which substantially decreased the stability construction costs. Since the seismic improvements will be constructed at a later date, it would no longer be feasible to construct the shear panels. The stability berm improvements will increase the permanent wetland impacts as identified in the 2015 APD IS/MND; however, the overall project costs would be substantially more if shear panels were constructed instead. Therefore, Port determined the most feasible option to move forward to comply with FEMA requirements is to construct the stability berm (URS, 2016).

2.2 Station 206+00 to 243+00 – Vehicle Service Road Alignment

As part of the original design, the Port proposed to improve the perimeter dike that extended beyond an interior vehicle service road near the approach end of Runway 12. The original design of improvements along this reach of the perimeter dike included raising the dike crest and the crest structure and controlling seepage.

Subsequent to completion of the 100 percent design, the Port reviewed the project area and determined that improving the vehicle service road, rather than the entire perimeter dike that extends beyond the vehicle service road, would be most protective for the airport from a 100 year flood event. Improvements would include raising the vehicle service road and installing sheetpile.

3.0 CEQA ANALYSIS

Per Section 15164 of the CEQA Guidelines, an addendum to a previously certified Negative Declaration ("ND") if some changes or additions are necessary, but none of the conditions calling for preparation of a subsequent Negative Declaration per Section 15162 have occurred. As described in Section 15162, no subsequent or supplemental ND shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous ND due to the involvement of new significant environmental effects or a substantial increase in the severity of the previously identified significant effects;

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous ND due to the involvement of significant new environmental effects or a substantial increase in the severity of previously identified significant effects; or

3. New important information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the ND was adopted, that shows that:

    - The project will have one or more significant effects not discussed in the previous ND;
    - Significant effects previously examined will be substantially more severe than shown in the previous ND;
    - Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more of the significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
    - Mitigation measures or alternatives which are considerably different from those analyzed in the previous ND would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The revisions to the South Field Airport Perimeter Dike Improvement Project, as described in Section 2.0, would not result in any of the conditions above. There would be no new and/or more severe significant impacts above those identified in the 2015 APD IS/MND as a result of the proposed Project, as analyzed in Section 4.0. Moreover, mitigation measures or alternatives are not considerably different than what was proposed in the previous 2015 APD IS/MND.

As noted in Section 15164 of the CEQA Guidelines, an addendum need not be circulated for public review. Decision-making bodies shall consider the addendum with the adopted negative declaration prior to making decisions on the project.

4.0 ENVIRONMENTAL ANALYSIS

For all resources except Biological Resources, the proposed Project revisions are not expected to result in any substantial change in the impacts disclosed in the previously prepared ND. Because the location of the Project has not changed, no changes in impacts to agricultural resources, cultural resources, mineral resources, and land use as described in the 2015 APD IS/MND would occur. The elevation of the perimeter dike would be the same as described in the 2015 APD IS/MND and would not result in new or changed aesthetics impacts. Because construction activities and duration for the revised Project would be similar to what is described in the 2015 APD IS/MND, construction impacts associated with air quality, greenhouse gas emissions, water quality, hazardous materials, noise, recreation, and transportation would be similar and the Mitigation Measures AQ-1, HZ-1, HZ-2, HZ-3, and RE-1 included in the IS/MND would be implemented to reduce construction impacts to less than significant.

A discussion of the changes in impacts to Biological Resources due to the changes in the Project is provided below.

4.1 Effects on Special-Status Species

The proposed revisions to the Project include permanent fill for raising the crest structure at the revised vehicle road alignment at Station 206+00 to 230+00 and Station 234+00 to 237+00, areas not included in the original project design and habitat assessment area. Therefore, the Port's consultant, Huffman Broadway Group, Inc. ("HBG"), assessed the revised vehicle road alignment for special-status species and prepared an addendum to the February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project (HBG 2017). The addendum is included as Attachment B. The Biological Assessment and the addendum were used to evaluate potential impacts to special status species from the proposed revisions to the Project.

Salt Marsh Harvest Mouse

As described in the 2015 APD IS/MND, potential salt marsh harvest mouse habitat is present in the Project Area, and the Project could impact salt marsh harvest mouse habitat by permanently removing or temporarily disturbing vegetation within non-tidal wetlands. Although the salt marsh harvest mouse is extremely unlikely to occur in the study area, the IS/MND included BMPs and mitigation measures to reduce potential effects to salt marsh harvest mouse to less than significant.

As described in the HBG addendum, the potential for salt marsh harvest mouse to occur in the revised Project Area is extremely small, similar to the IS/MND evaluation. The Project revisions would result in permanent impacts between Station 206+00 and 230+00 to an additional 0.026 acre of vegetation marginally suitable for the salt marsh harvest mouse. Habitat between Stations 234+00 and 237+00 is designated as "Unsuitable for Salt Marsh Harvest Mouse" (HBG 2017)

Occurrences of the salt marsh harvest mouse in the revised Project Area is extremely unlikely, and it is probable that this species does not occur at OAK. In the unlikely event that an individual occurs on site during construction activities, this could be a potentially significant impact, as described in the IS/MND. To reduce impacts to a less than significant level, the Port will implement the BMPs described under Section 2.6 of the 2015 APD IS/MND. In addition, to further reduce the potential significant effects to the salt marsh harvest mouse, the Port will implement the IS/MND Mitigation Measure BO-1, Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat, in the revised Project Area.

Ridgway's Rail

As described in the 2015 APD IS/MND, the Project would temporarily disturb and permanently impact non-tidal wetlands that are marginally suitable for the Ridgway's rail. Ridgway's rail nesting is not likely to occur in the study area due to predation pressure and the absence of suitable breeding habitat. Juvenile migrants have a very low potential to occur in the study area when dispersing from nearby regional populations. Although the Ridgway rail is unlikely to occur in the study area, the IS/MND included BMPs and mitigation measures to reduce potential effects to salt marsh harvest mouse to less than significant.

As described in the HBG addendum, the potential for Ridgway rail to occur in the revised project area is extremely small, similar to the IS/MND evaluation. The Project revisions would result in permanent impacts between Station 234+00 and 237+00 to an additional 0.019 acre of vegetation considered marginally suitable habitat for Ridgway's rail.

In the unlikely event that dispersing individual Ridgway's rails occur on site during construction activities, this could be a potentially significant impact, as described in the IS/MND. To reduce impacts to a less than significant level, the Port will implement the BMPs described in this document under Section 2.6. The Port will also implement Mitigation Measure BO-2, Environmental Awareness Training, and Mitigation Measure BO-3, Conduct Pre-Construction Surveys, to further reduce impacts. The Port will also implement off-site mitigation measures if required by the U.S. Fish and Wildlife Services.

Other Special-Status Species

As described in the IS/MND, other special-status species that have the potential to be affected by wetland loss from the Project include the California black rail, northern harrier, white-tailed kite, salt marsh common yellowthroat, and Alameda song sparrow. None of these species has been documented breeding at the Airport, but it is possible that they are at least seasonally present in wetlands on site. Potential effects to these special-status wildlife species may occur due to loss of wetland, including the revised impacted areas, which these species may be actively using for foraging, breeding, roosting, or other activities. Construction activities during the nesting season may also result in significant impacts to these species if they are nesting in or near the habitat assessment area. Implementation of construction BMPs per Section 2.6 of the 2015 APD IS/MND and Mitigation Measure BO-3, Conduct Pre-Construction Surveys, would reduce any impacts to less-than-significant levels. The BMPs and Mitigation Measure BO-3 would also be implemented in the revised project area to reduce any impacts to other special status species to a less than significant level.

4.2 Effects on Wetlands and Other Waters

Wetlands and other waters of the U.S. are present in the project area. Implementation of the Project as described in the 2015 APD IS/MND would result in temporary and permanent impacts to 4.90 acres of non-tidal wetlands and 0.36 acre of non-tidal other waters of the U.S. Impacts to the 4.90 acres of non-tidal wetlands consist of 3.32 acres of temporary impacts and 1.58 acres of permanent impacts. Impacts to the 0.36 acre of non-tidal other waters of the U.S. consist of 0.20 acre of temporary impacts and 0.16 acre of permanent impacts. These are potentially significant impacts. To reduce the impacts to wetlands and other waters of the U.S. to a less than significant level, the Port would implement Mitigation Measure BO-4, to ensure no net loss of wetlands through the acquisition of offsite compensatory mitigation for unavoidable effects to jurisdictional wetlands, as reviewed and approved by the USACE and the RWQCB. In addition, the Port would implement specific construction BMPs, as described under Section 2.5 of the 2015 APD IS/MND, to minimize effects to adjacent jurisdictional wetlands and other waters during construction.

The proposed revisions to the Project would change the quantities of impacts to wetlands and other waters of the U.S., as summarized in Table 1. Temporary and permanent impacts in some locations would be avoided by the proposed revisions, and new areas of impact would occur. In total, the proposed revisions to the Project would eliminate 3.31 acres of temporary impacts to non-tidal wetlands and 0.2 acres of

temporary impacts to non-tidal other waters, and would decrease permanent impacts to non-tidal other waters from 0.16 acre to 0.143 acre. The revisions would increase the permanent impacts to non-tidal wetlands from 1.43 acres to 2.717 acres and increase permanent impacts to tidal wetlands from 0 to 0.019 acre. As described in the 2015 APD IS/MND, the Port would implement Mitigation Measure BO-4, to ensure no net loss of wetlands through the acquisition of offsite compensatory mitigation for unavoidable effects to the revised quantity of jurisdictional wetlands, as reviewed and approved by the USACE and the RWQCB. In addition, the Port would implement specific construction BMPs, as described under Section 2.5 of the 2015 APD IS/MND, to minimize effects to adjacent jurisdictional wetlands and other waters during construction. In addition, the Port will continue to work with the USACE and the RWQCB to obtain a Section 404 permit for discharges to waters of the U.S., and a corresponding Section 401 Water Quality Certification/Waste Discharge Requirements from the RWQCB. Through these processes, the agencies would ensure that the revised Project is the Least Environmentally Damaging Practicable Alternative to impacting wetlands and waters of the U.S., and would assist in finalizing the most appropriate mitigation option for wetlands.

5.0 CONCLUSION

The revisions to the South Field Airport Perimeter Dike Improvement Project, as described in Section 2.0, would not result in any of the conditions calling for preparation of a subsequent Negative Declaration as defined in the CEQA Guidelines, Section 15162. No new significant environmental effects or a substantial increase in the severity of the previously identified significant effects, including effects to wetlands and special-status species, would occur. No substantial changes have occurred with respect to the circumstances under which the Project is undertaken. No changes in mitigation measures have been identified and no new mitigation measures are proposed or needed. Therefore, no subsequent or supplemental negative declaration is required. This addendum to the 2015 ADP IS/MND has been prepared as the appropriate environmental document to present the effects of the proposed modifications to the Project.

6.0 REFERENCES:

CDFW (California Department of Fish and Game). 2013. Rarefind 5, a program created by the California Department of Fish and Game, allowing access to the California Natural Diversity Database.

Huffman-Broadway Group, Inc. (HBG). 2017. Addendum to February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project. August 29.

URS Corporation (URS). 2015a. FEMA and Seismic Improvements for Perimeter Dike 90 Percent Design Report, Oakland International Airport, Oakland, California. March 10.

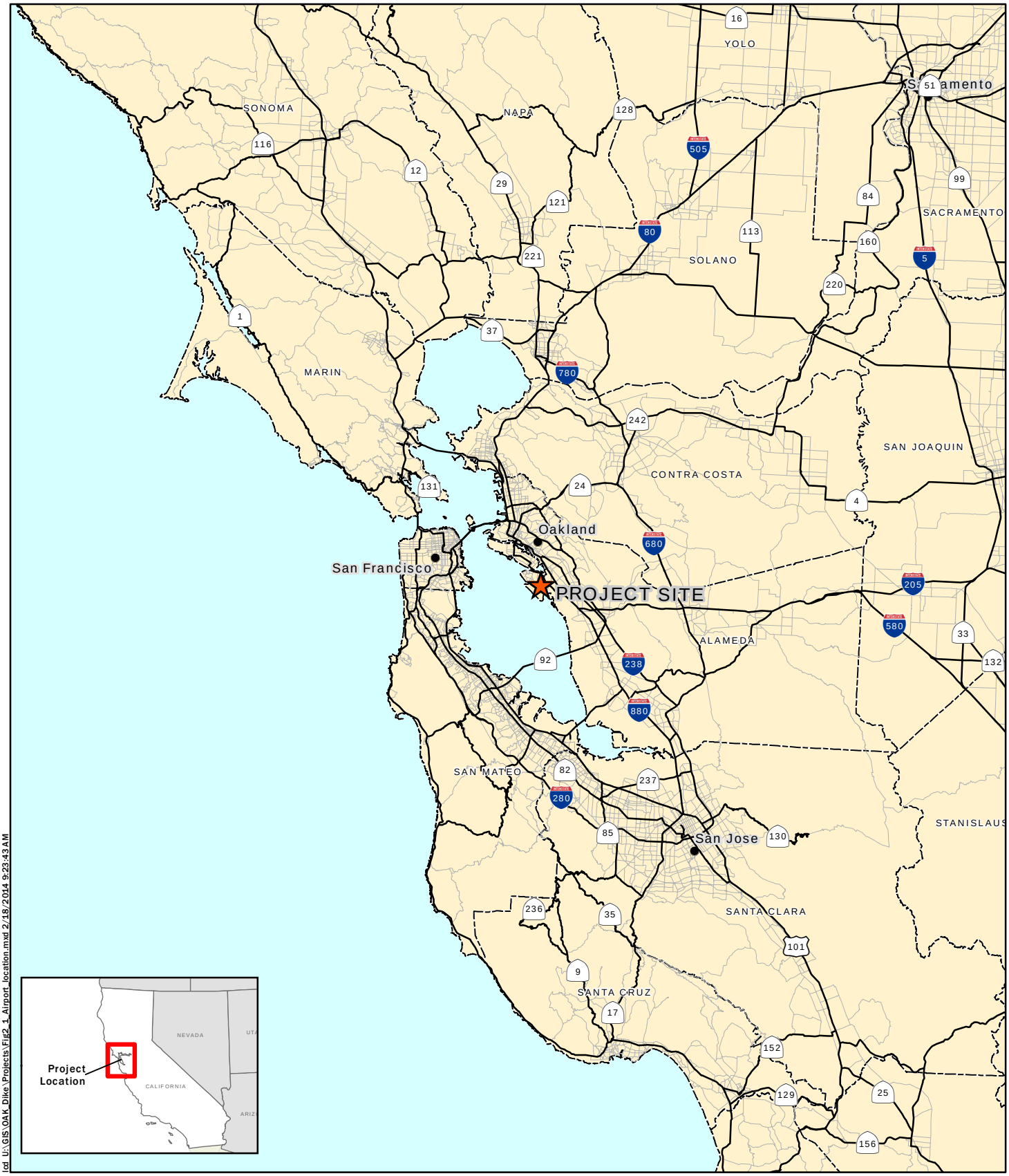
URS. 2015b. Initial Study/Mitigated Negative Declaration, Airport Perimeter Dike FEMA and Seismic Improvements Project, Oakland International Airport, Oakland, California. September 1.

Table 1: Summary of Revised Impacts to Wetlands and Waters of the U.S.

Station	Proposed Revisions	Non-Tidal Wetlands				Non-Tidal Other Waters				Tidal Wetlands		Total Wetlands and Other Waters			
		Original		Revised		Original		Revised		Original	Revised	Original		Revised	
		Temp	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Perm	Perm	Temp	Perm	Temp	Perm
15+00 to 52+00	Berm footprint changed due to design requirements	0.12	0.20	0	0.392	0	0	0	0.002	0	0	0.12	0.20	0	0.394
52+00 to 82+00	Replace shear panels with stability berm	1.36	0.04	0	1.394	0	0	0	0	0	0	1.36	0.04	0	1.394
82+00 to 164+00	Berm footprint changed due to design requirements	0.26	0.35	0	0.089	0.03	0.01	0	0.007	0	0	0.29	0.36	0	0.096
164+00 to 192+00	Berm footprint changed and dike raised due to design requirements	0.15	0.84	0	0.731	0.17	0.15	0	0.134	0	0	0.32	0.994	0	0.865
192+00 to 206+00	Berm footprint changed and dike raised due to design requirements	0.36	0	0	0.085	0	0	0	0	0	0	0.36	0	0	0.085
206+00 to 230+00	Service road realignment; berm footprint changed and dike raised due to design requirements	1.06	0	0	0.026	0	0	0	0	0	0	1.06	0	0	0.026
230+00 to 241+00	Service road realignment	0	0	0	0	0	0	0	0	0	0.019			0	0.019
Total		**3.31**	**1.43**	**0**	**2.717**	**0.2**	**0.16**	**0**	**0.143**	**0**	**0.019**	**3.51**	**1.59**	**0**	**2.879**

Appendix A

Figures



Major Cities
Major Highways
County Boundaries

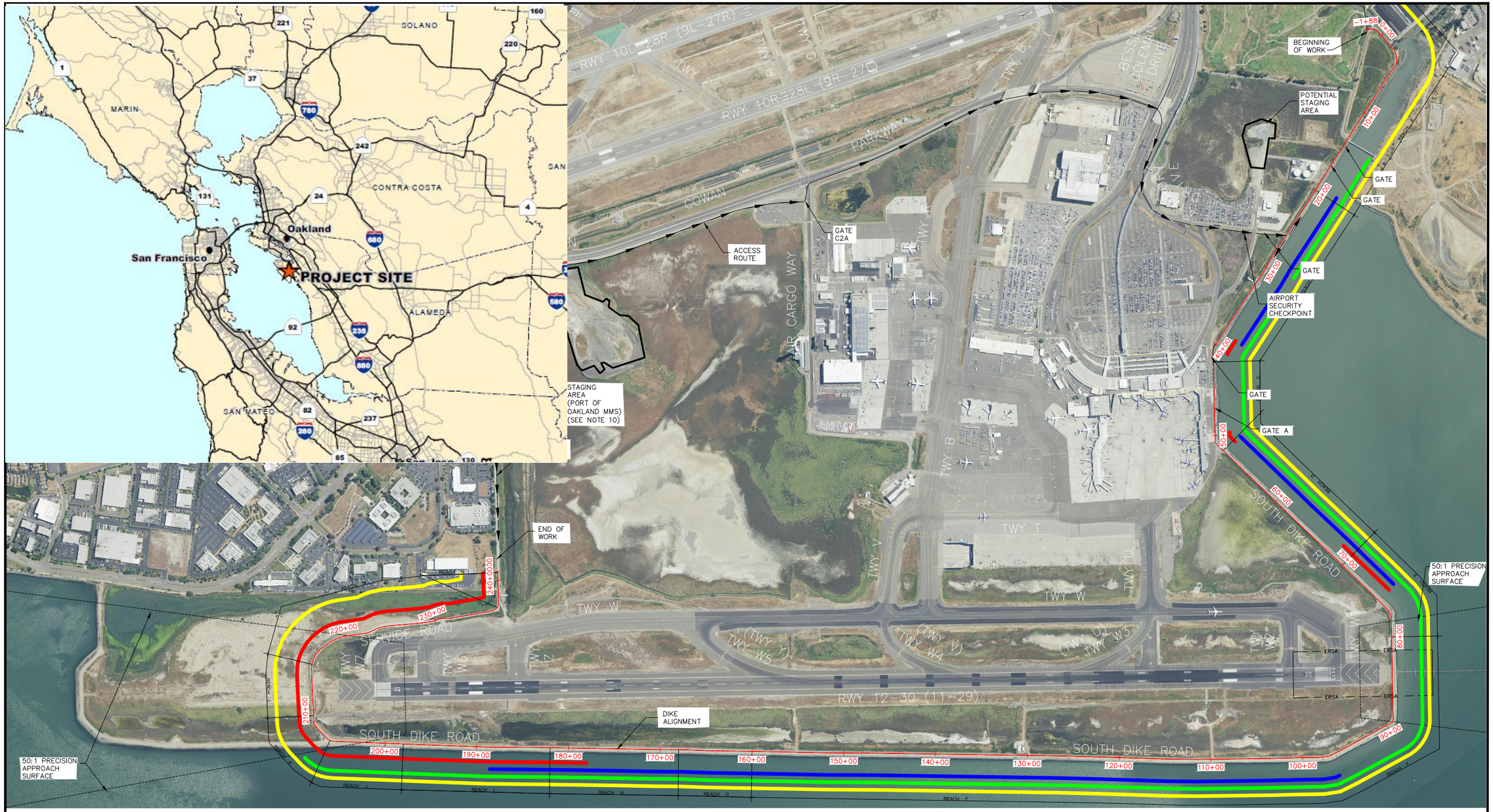
0 7.5 15 MILES

AIRPORT VICINITY

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 1



LEGEND

- SEEPAGE BERM OR CUTOFF WALL
- STABILITY BERM
- CREST STRUCTURE IMPROVEMENT (RAISE, WALL, ARMOR)
- DIKE RAISE

SITE PLAN

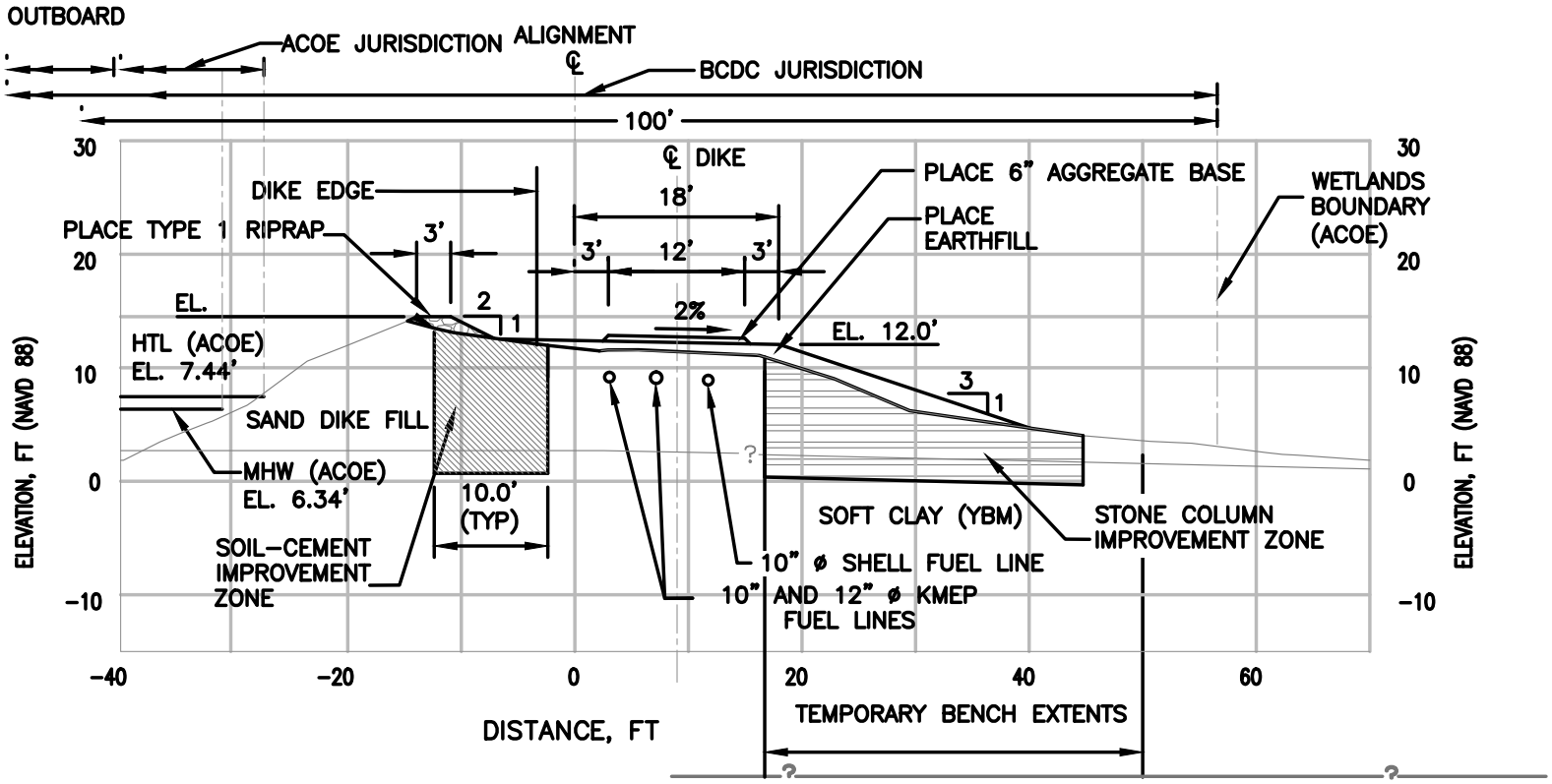
SCALE: 1"=500'

500' 0 500' 1000'

APPROXIMATE SCALE IN FEET

URS	Project No. 26817687 Port of Oakland Airport Perimeter Dike Improvement Project	EXTENT OF PROPOSED FEMA IMPROVEMENTS TO DIKE	Figure 6-1

Figure 2



TYPICAL COMBO CREST/DIKE RAISE (WITH SEISMIC IMPROVEMENT)

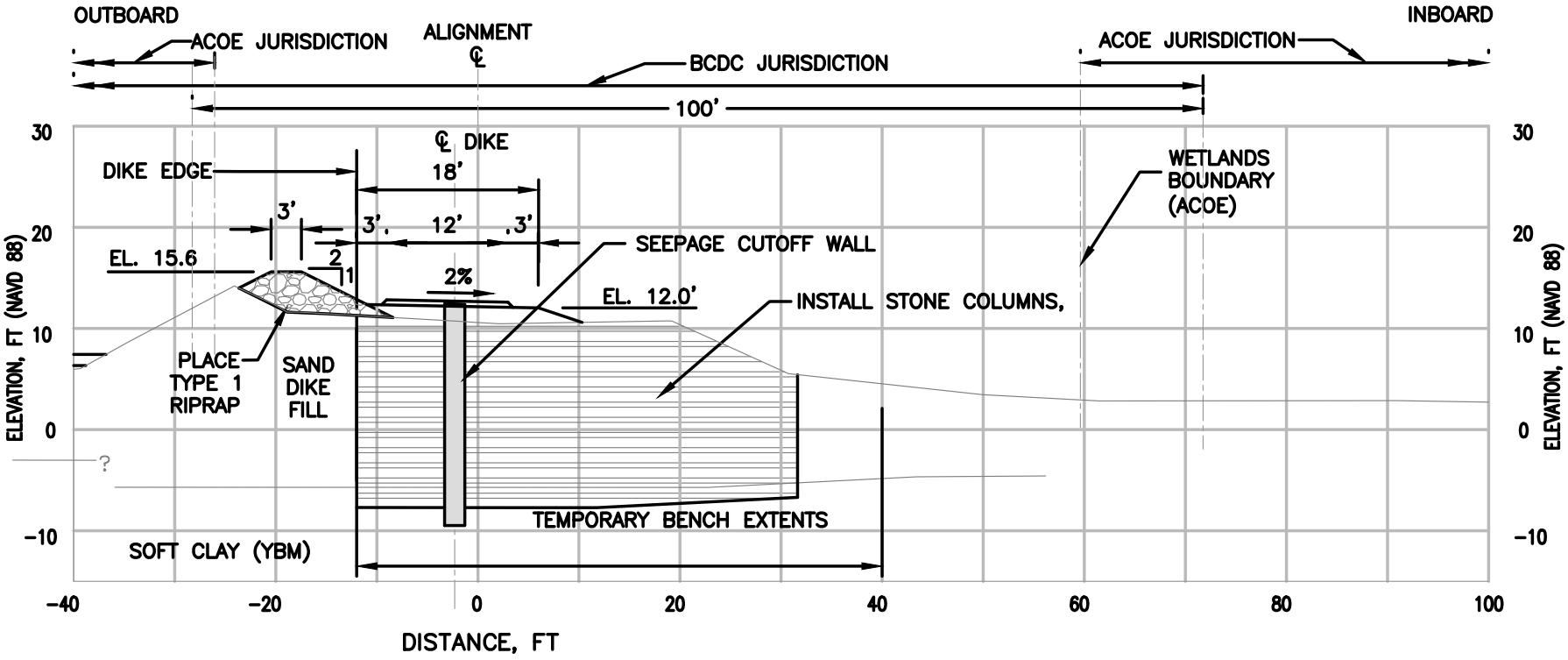
02/14/14 vsa T:\Oakland Dike\Figs_PMND_2014_02.indd

SOIL-CEMENT BLOCK

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 3



TYPICAL CREST/DIKE RAISE (WITH CUTOFF WALL & SEISMIC IMPROVEMENT)

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SEEPAGE CUTOFF WALL

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

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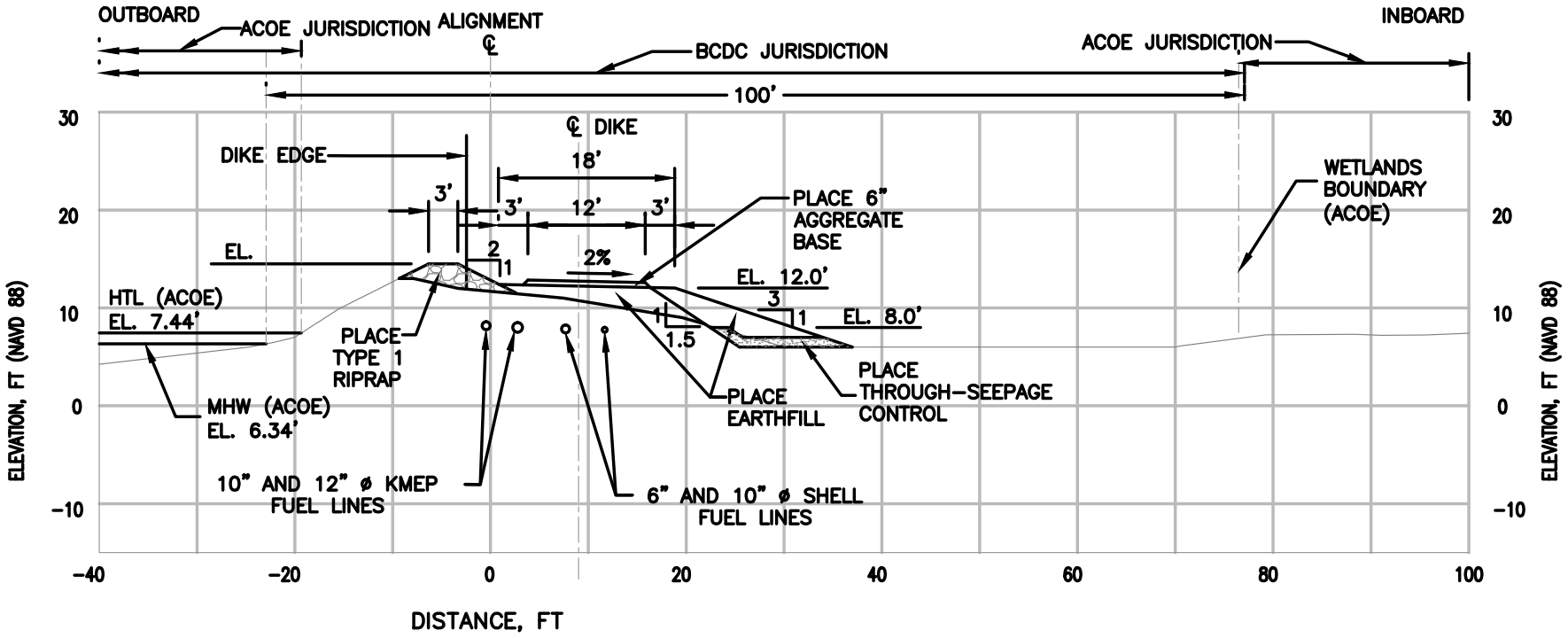
FIGURE



TYPICAL COMBO CREST/DIKE RAISE AND THROUGH-SEEPAGE CONTROL

02/14/14 vsa T:\Oakland Dike\Figs_PMND_2014_02.indd

DRAINAGE SYSTEM

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

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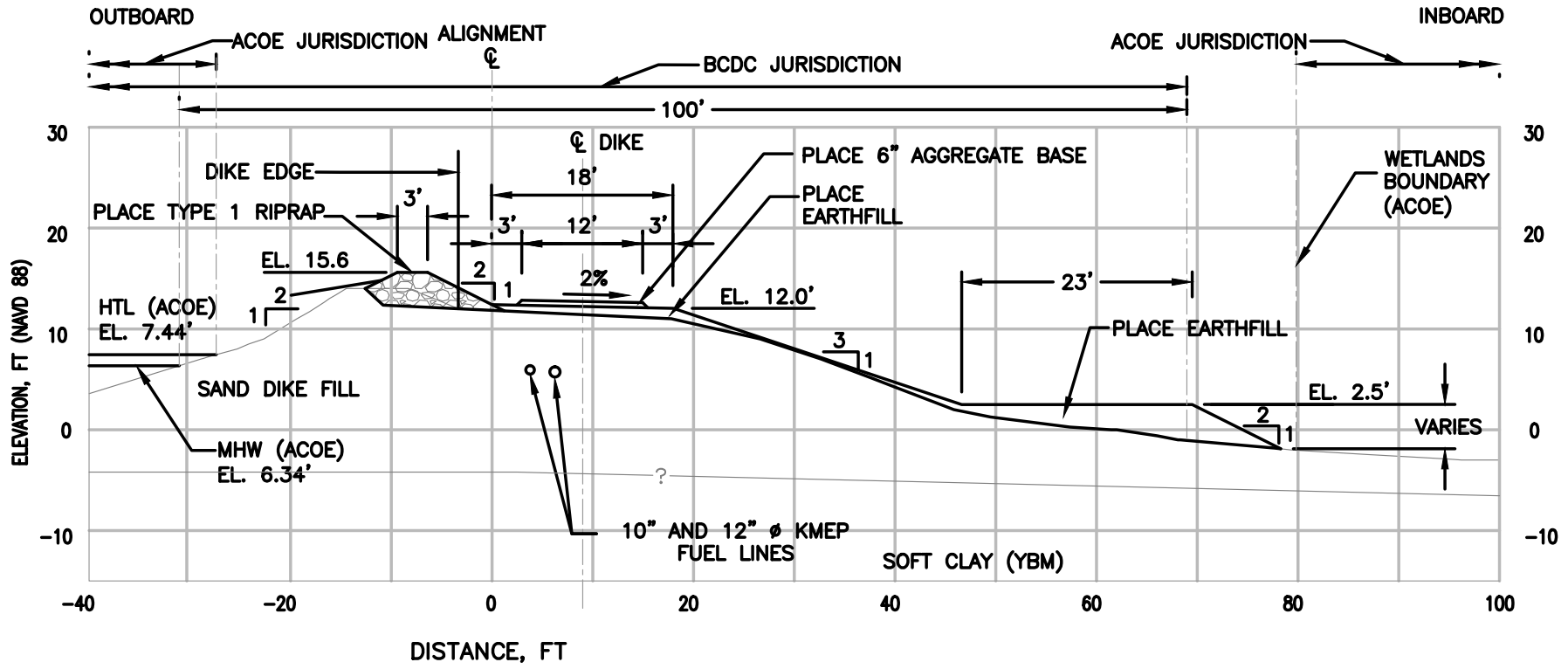
FIGURE 5



TYPICAL COMBO CREST/DIKE RAISE AND STABILITY BERM EL. 2.5

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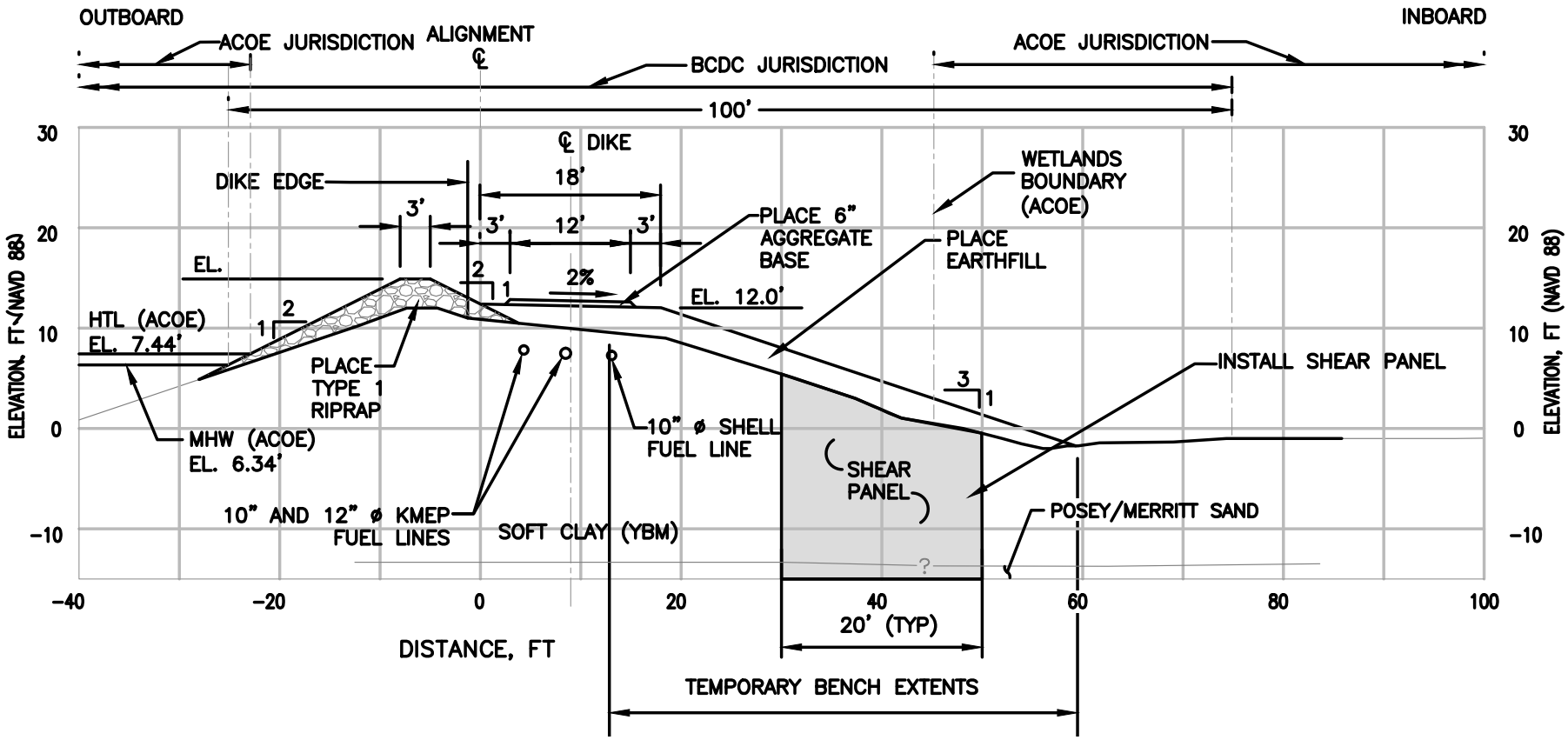
STABILITY BERM

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 6



TYPICAL COMBO CREST/DIKE RAISE (WITH SHEAR PANELS)

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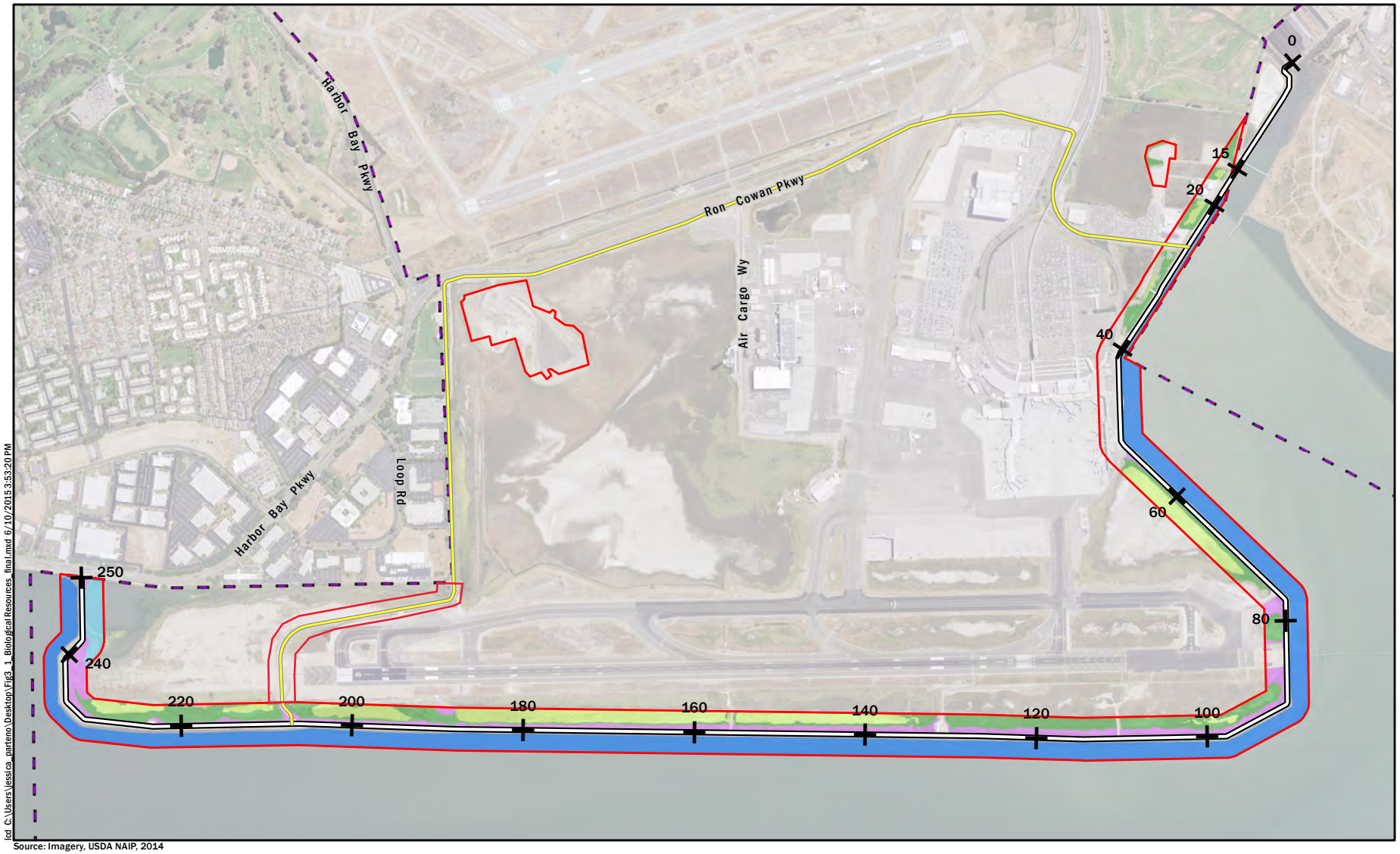
SOIL-CEMENT SHEAR PANEL

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 7



lod C:\Users\jessica_parteno\Desktop\Fig3_1_Biological Resources_final.mxd 6/10/2015 3:53:20 PM

Source: Imagery, USDA NAIP, 2014

Perimeter Dike Alignment
Access Route
Biological Study Area
Airport Boundary

Habitat
Uplands
Non-Tidal Wetlands
Non-Tidal Waters of the U.S.
Muted Tidal Wetlands and Waters of the U.S.
Open Water

0 1,000 2,000 FEET

BIOLOGICAL STUDY AREA AND WETLAND AND UPLAND HABITATS

Airport Perimeter Dike FEMA and Seismic Improvements Project
Oakland International Airport
28067727 Oakland, CA

URS

FIGURE 3-1

Figure 8 - Proposed Project Study Area

Study Area

Mean High Water (6.34 ft)*

High Tide Line (7.44 ft)*

*NAVD88 Vertical Datum

Wetland (Total Jurisdictional Area = 502.19 AC)

Wetlands (tidal) Subject to Section 404 and Section 10 (20.86 AC)

Wetlands (non-tidal) Subject to Section 404 (302.93 AC)

Other Waters (tidal) Subject to Section 404 and Section 10 (24.15 AC)

Other Waters (non-tidal) Subject to Section 404 (154.25 AC)

Note: Although Doolittle Drive is included within the Study Area, it is owned by Caltrans. A portion of the Tidal Wetland on the south side of Doolittle Drive between Harbor Bay Parkway and Old Earhart Road and the majority of the Non-Tidal Wetlands along the roadside ditches of Doolittle Drive are owned by Caltrans (approximately 4,345 linear feet from north to south). On the Bay side of Doolittle Drive (i.e., north side of Doolittle Drive), Caltrans property extends into the Bay in some areas.

SHEET 1

SHEET 2 SHEET 3 SHEET 4

SHEET 5

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Feet

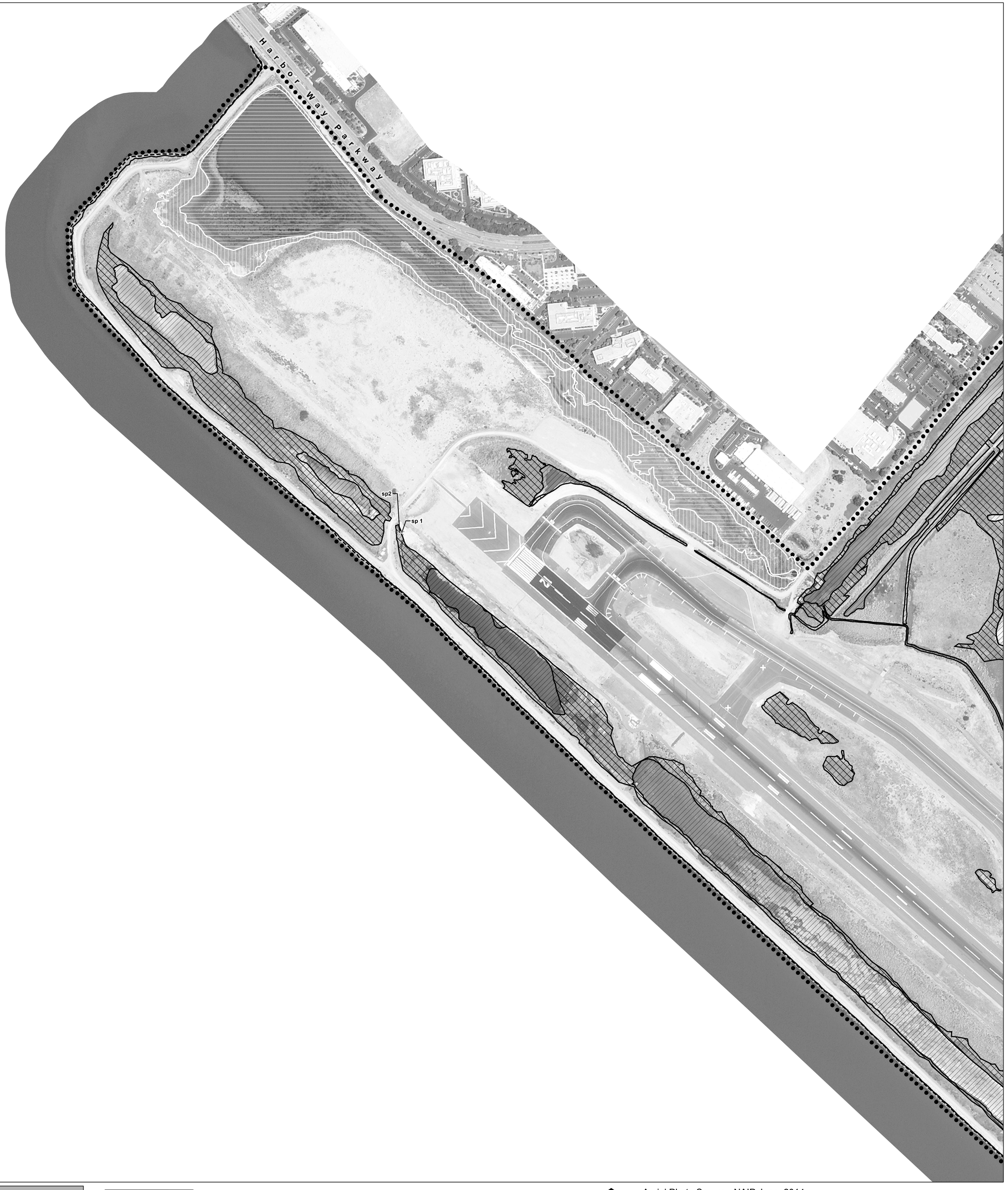
N

Aerial Photo Source: NAIP June, 2014

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

Exhibit 1. 2016 Jurisdictional Delineation Map, Sheet 1 of 5

Figure 9a



Study Area
Mean High Water (6.34 ft)*
High Tide Line (7.44 ft)*
*NAVD88 Vertical Datum

Wetland (Total Jurisdictional Area = 502.19 AC)

Wetlands (tidal) Subject to Section 404 and Section 10 (20.86 AC)
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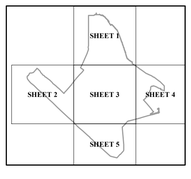


0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Feet

N

Aerial Photo Source: NAIP June, 2014

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

Exhibit 1. 2016 Jurisdictional Delineation Map, Sheet 2 of 5

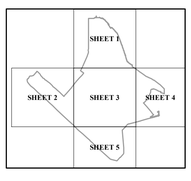
Figure 9b

Study Area
Mean High Water (6.34 ft)*
High Tide Line (7.44 ft)*
*NAVD88 Vertical Datum

Wetland (Total Jurisdictional Area = 502.19 AC)

- Wetlands (tidal) Subject to Section 404 and Section 10 (20.86 AC)
- Wetlands (non-tidal) Subject to Section 404 (302.93 AC)
- Other Waters (tidal) Subject to Section 404 and Section 10 (24.15 AC)
- Other Waters (non-tidal) Subject to Section 404 (154.25 AC)

Note: Although Doolittle Drive is included within the Study Area, it is owned by Caltrans. A portion of the Tidal Wetland on the south side of Doolittle Drive between Harbor Bay Parkway and Old Earhart Road and the majority of the Non-Tidal Wetlands along the roadside ditches of Doolittle Drive are owned by Caltrans (approximately 4,345 linear feet from north to south). On the Bay side of Doolittle Drive (i.e., north side of Doolittle Drive), Caltrans property extends into the Bay in some areas.



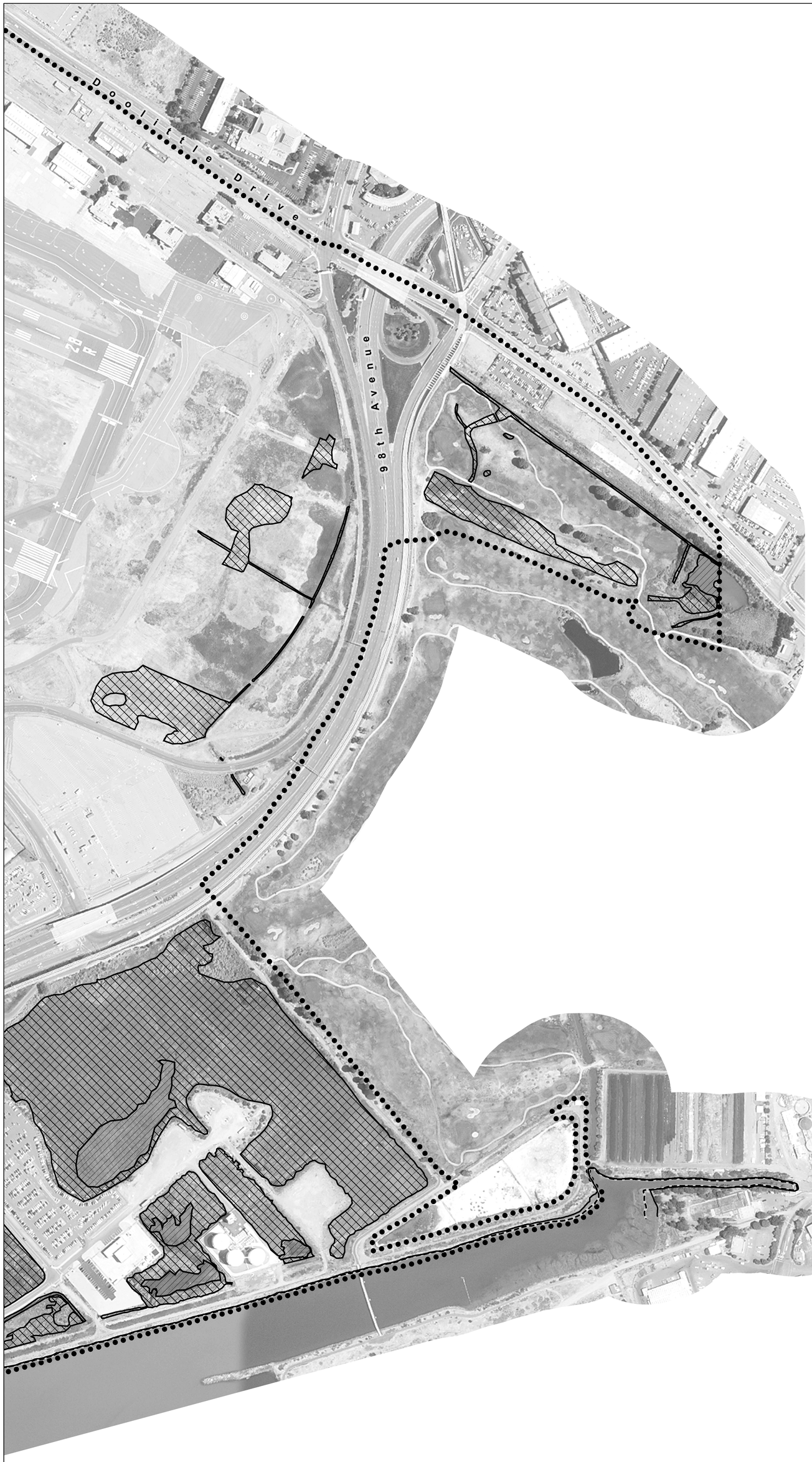
0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Feet

Aerial Photo Source: NAIP June, 2014

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

Exhibit 1. 2016 Jurisdictional Delineation Map, Sheet 3 of 5

Figure 9c

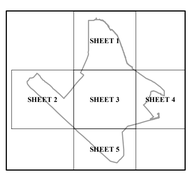


Study Area
Mean High Water (6.34 ft)*
High Tide Line (7.44 ft)*
*NAVD88 Vertical Datum

Wetland (Total Jurisdictional Area = 502.19 AC)

Wetlands (tidal) Subject to Section 404 and Section 10 (20.86 AC)
Wetlands (non-tidal) Subject to Section 404 (302.93 AC)
Other Waters (tidal) Subject to Section 404 and Section 10 (24.15 AC)
Other Waters (non-tidal) Subject to Section 404 (154.25 AC)

Note: Although Doolittle Drive is included within the Study Area, it is owned by Caltrans. A portion of the Tidal Wetland on the south side of Doolittle Drive between Harbor Bay Parkway and Old Earhart Road and the majority of the Non-Tidal Wetlands along the roadside ditches of Doolittle Drive are owned by Caltrans (approximately 4,345 linear feet from north to south). On the Bay side of Doolittle Drive (i.e., north side of Doolittle Drive), Caltrans property extends into the Bay in some areas.



0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Feet

Aerial Photo Source: NAIP June, 2014

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

Exhibit 1. 2016 Jurisdictional Delineation Map, Sheet 4 of 5

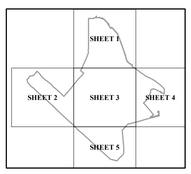
Figure 9d

Study Area
Mean High Water (6.34 ft)*
High Tide Line (7.44 ft)*
*NAVD88 Vertical Datum

Wetland (Total Jurisdictional Area = 502.19 AC)

Wetlands (tidal) Subject to Section 404 and Section 10 (20.86 AC)
Wetlands (non-tidal) Subject to Section 404 (302.93 AC)
Other Waters (tidal) Subject to Section 404 and Section 10 (24.15 AC)
Other Waters (non-tidal) Subject to Section 404 (154.25 AC)

Note: Although Doolittle Drive is included within the Study Area, it is owned by Caltrans. A portion of the Tidal Wetland on the south side of Doolittle Drive between Harbor Bay Parkway and Old Earhart Road and the majority of the Non-Tidal Wetlands along the roadside ditches of Doolittle Drive are owned by Caltrans (approximately 4,345 linear feet from north to south). On the Bay side of Doolittle Drive (i.e., north side of Doolittle Drive), Caltrans property extends into the Bay in some areas.



0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Feet

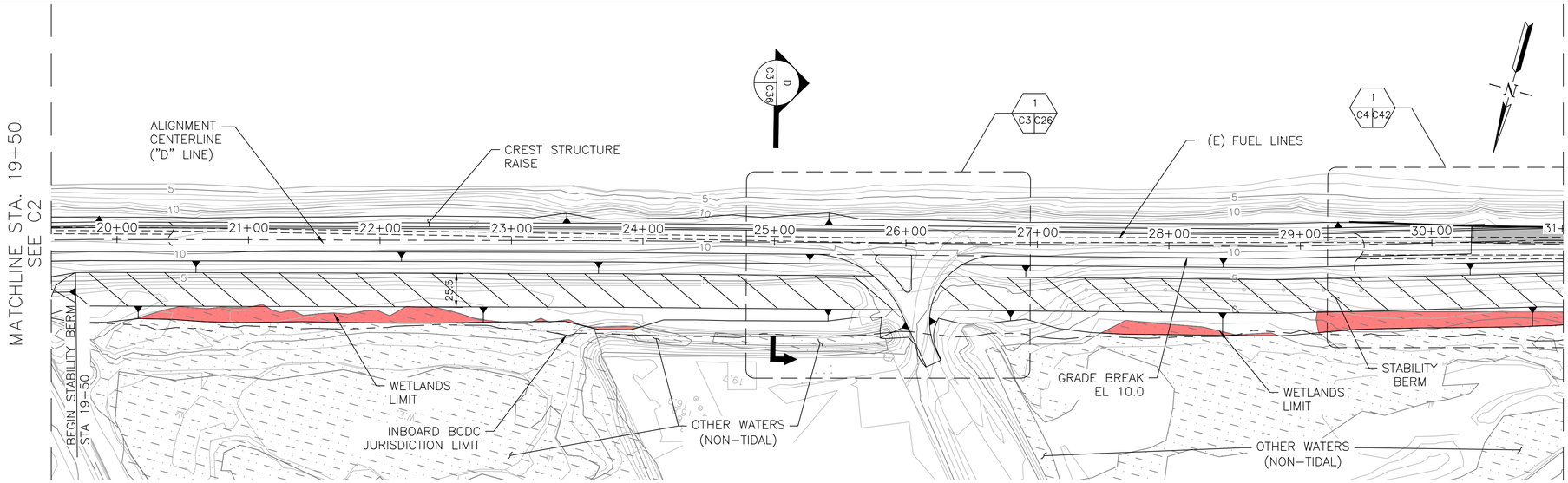
N

Aerial Photo Source: NAIP June, 2014

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

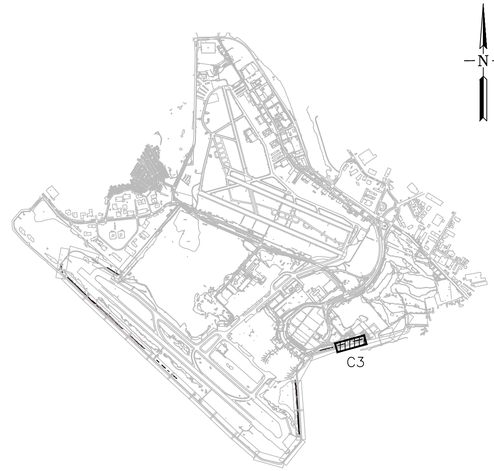
Exhibit 1. 2016 Jurisdictional Delineation Map, Sheet 5 of 5

Figure 9e

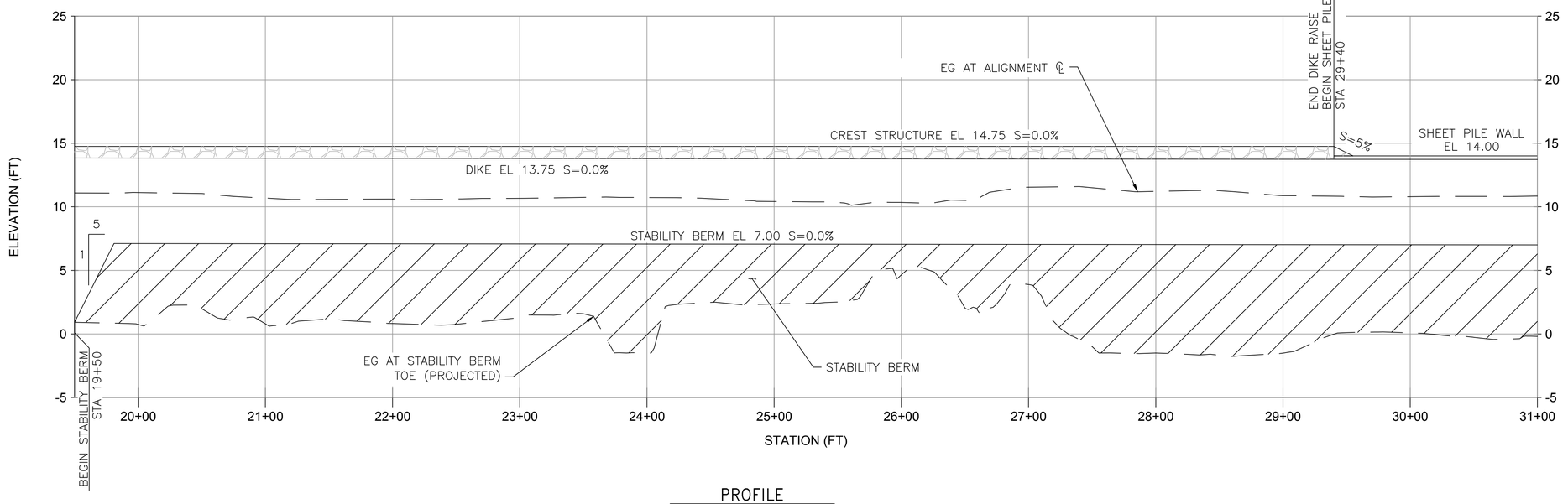


PLAN
SCALE: 1"=50'

50' 0 50' 100'
SCALE 1"=50'



KEYMAP
SCALE: 1"=3000'



PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 10

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
CAUTION: CHECK TRACING FOR LATEST REVISIONS					

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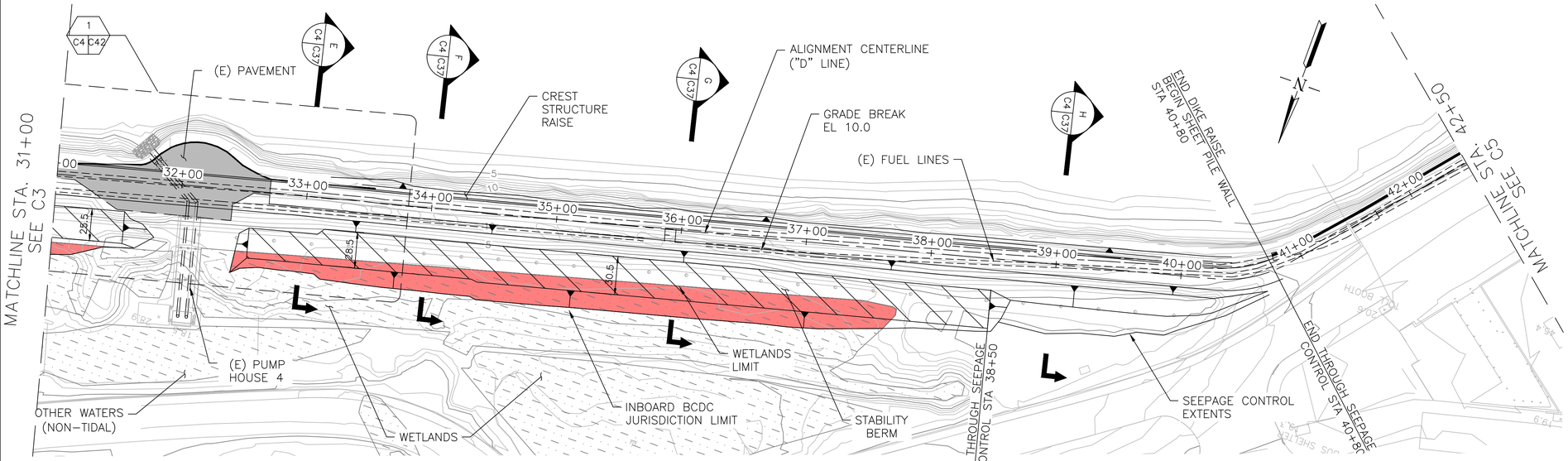
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 19+50 – STA 31+00

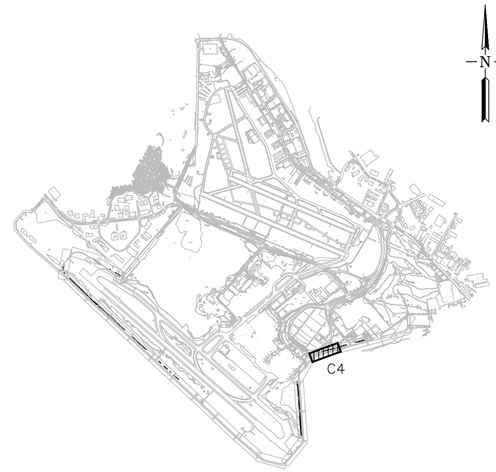
DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 8 OF 52 SHEETS
C3 | AA-4172

PRINT DATE 07-13-17 16:27:21 L:\Projects\Legacy\IE\PortOfOakland\26816413\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\60% Drawings with Impacts shown\C3 with Impacts.dwg Printed by steven.tough

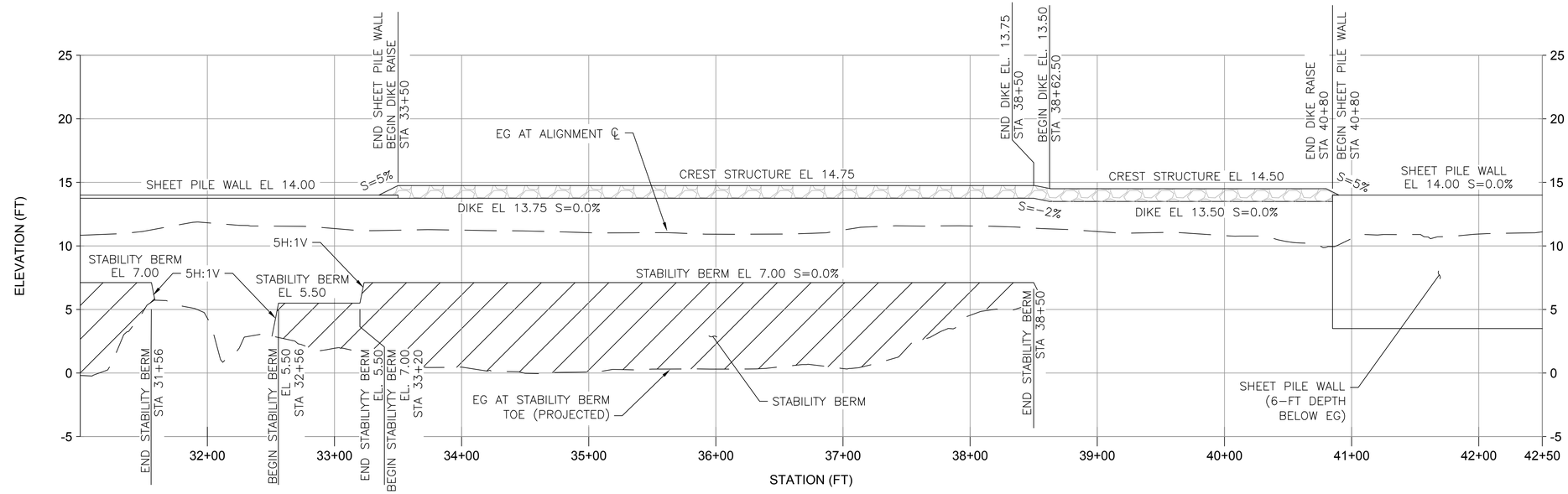


PLAN
SCALE: 1"=50'

50' 0 50' 100'
SCALE 1"=50'



KEYMAP
SCALE: 1"=3000'



PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 11

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
CAUTION: CHECK TRACING FOR LATEST REVISIONS					

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CHECKED J. ROADIFER
REG. ENGINEER NO.

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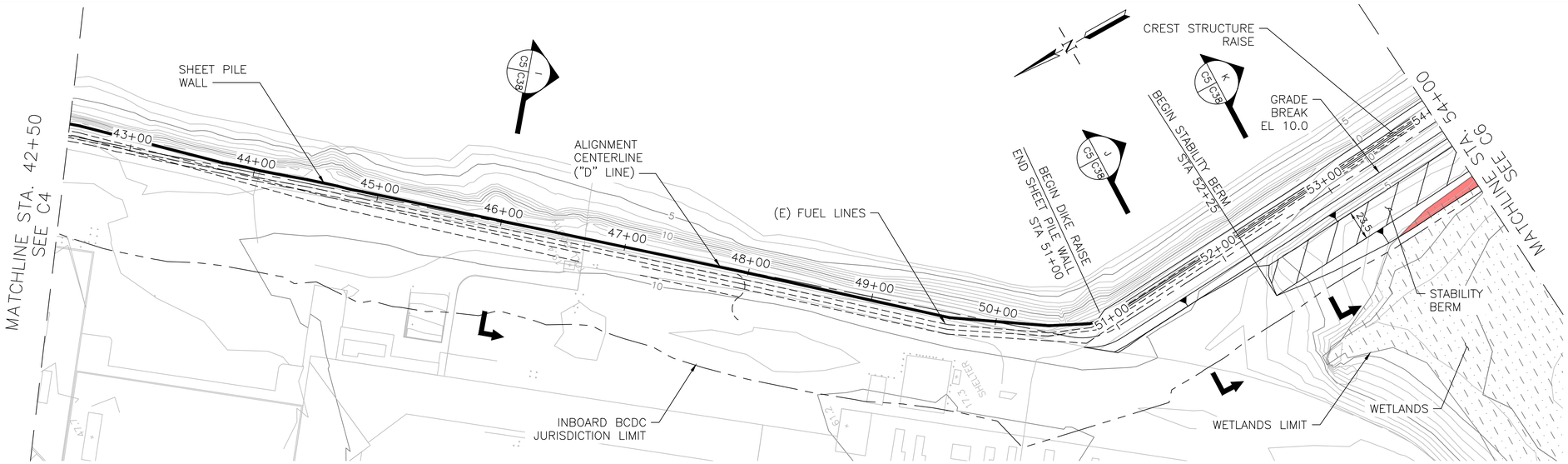
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 31+00 – STA 42+50

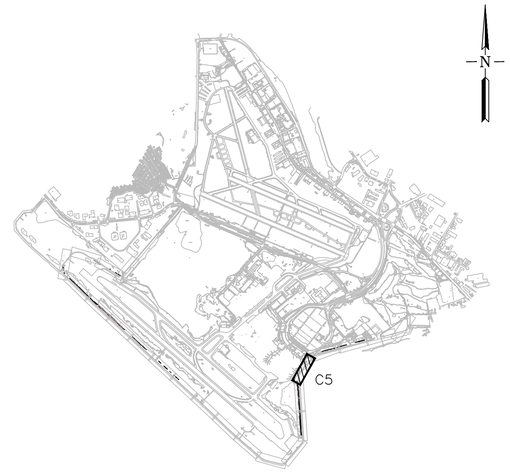
DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 9 OF 52 SHEETS
C4 AA-4172

PRINT DATE 07-13-17 16:35:00 L:\Projects\Legacy\EV\PortOfOakland\268164\3\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\60% Drawings with Impacts shown\C4 with Impacts.dwg Printed by steven.tough



PLAN
SCALE: 1"=50'

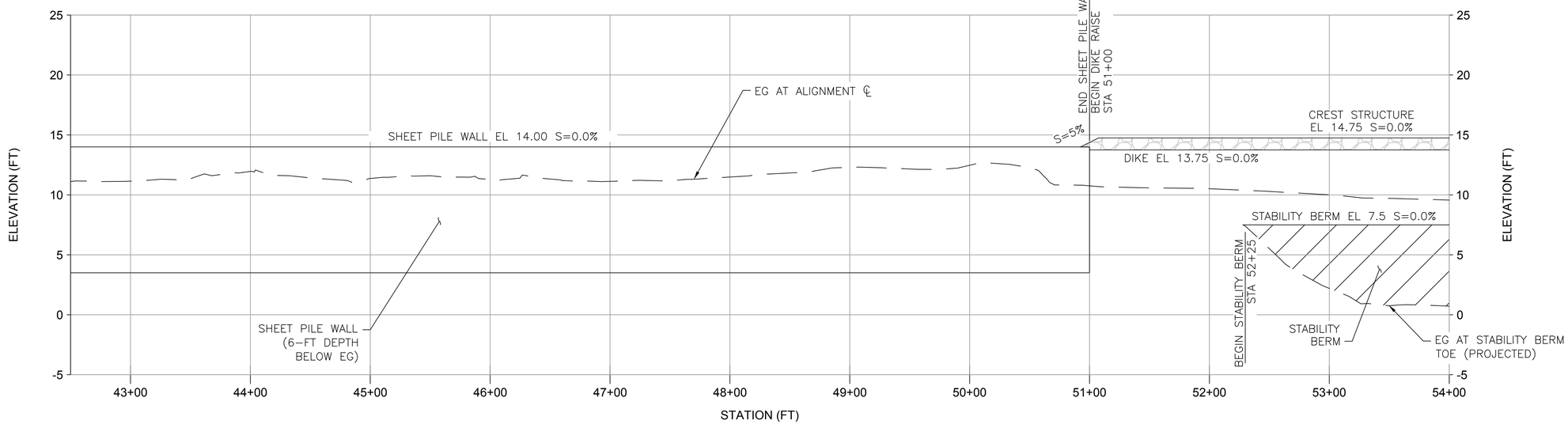
50' 0 50' 100'
SCALE 1"=50'



KEYMAP
SCALE: 1"=3000'

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.



PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 12

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:
PLANS
FIELD BOOKS

ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988

CAUTION:
CHECK TRACING FOR LATEST REVISIONS

NO.	REVISIONS	DATE	REV'D	APP'D

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OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 42+50 – STA 54+00

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 10 OF 52 SHEETS
C5 | AA-4172

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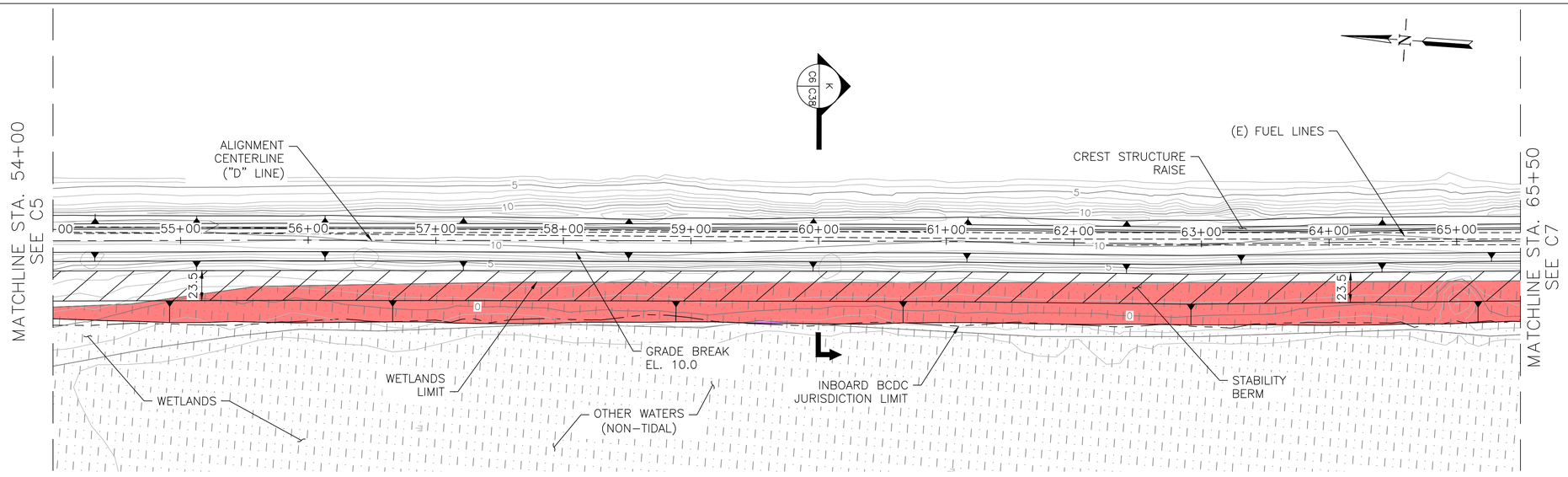
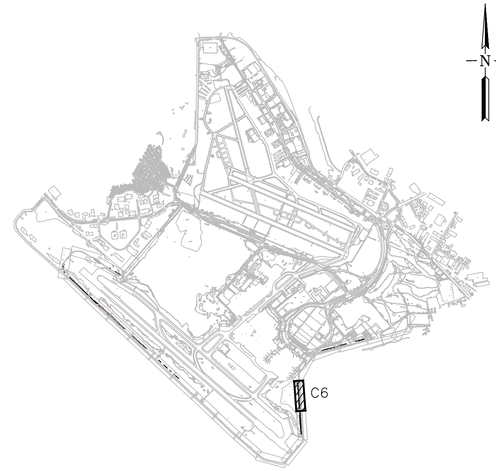


PLAN
SCALE: 1"=50'

50' 0 50' 100'
SCALE 1"=50'



KEYMAP
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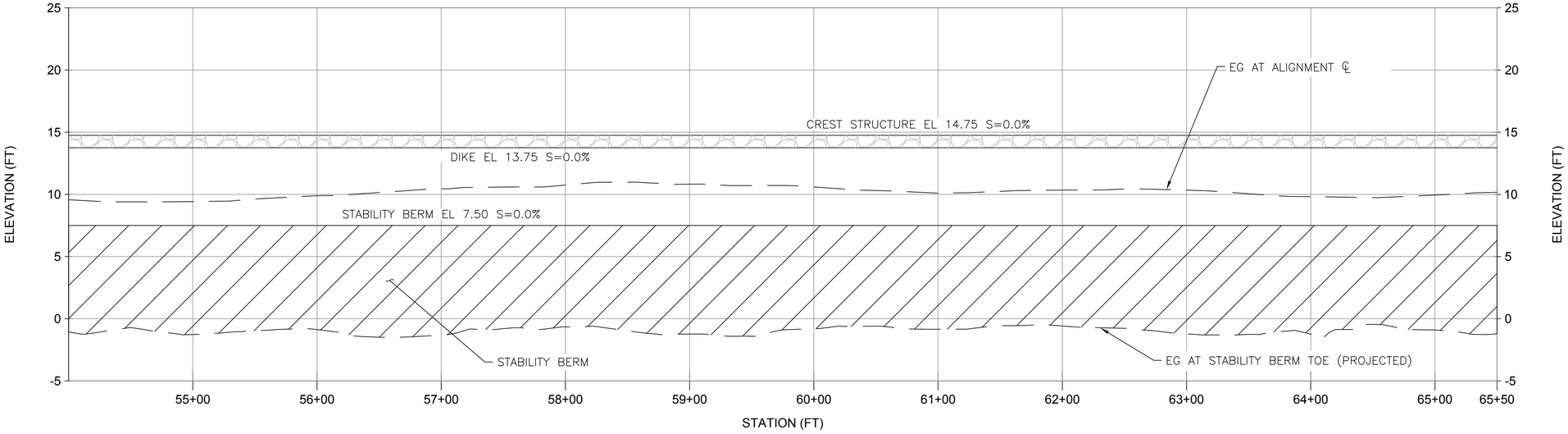

PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 13

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
CAUTION: CHECK TRACING FOR LATEST REVISIONS					

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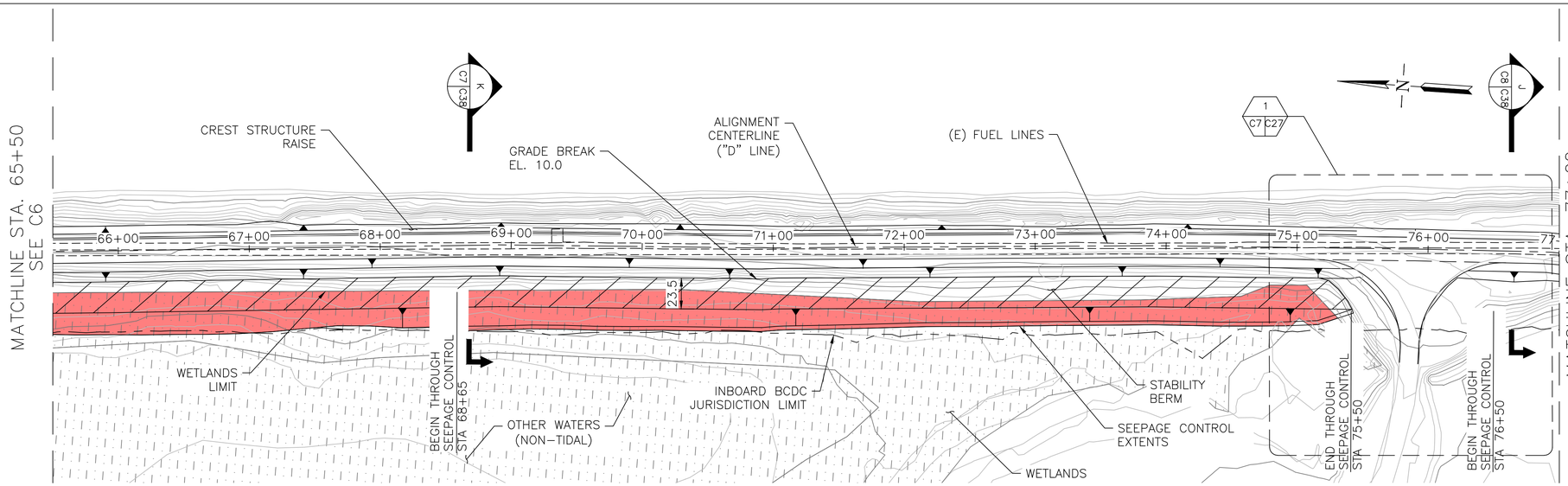
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 54+00 – STA 65+50

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 11 OF 52 SHEETS
C6 AA-4172

PRINT DATE 07-13-17 16:32:39 L:\Projects\Legacy\EV\PortOfOakland\268164\3\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\60% Drawings with Impacts shown\C6 with impacts.dwg Printed by steven.tough



PLAN
SCALE: 1"=50'

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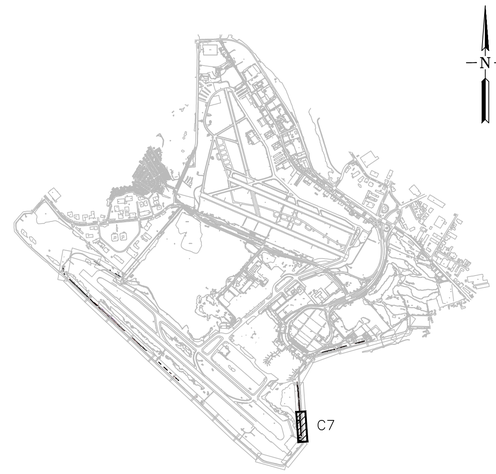
SCALE 1"=50'



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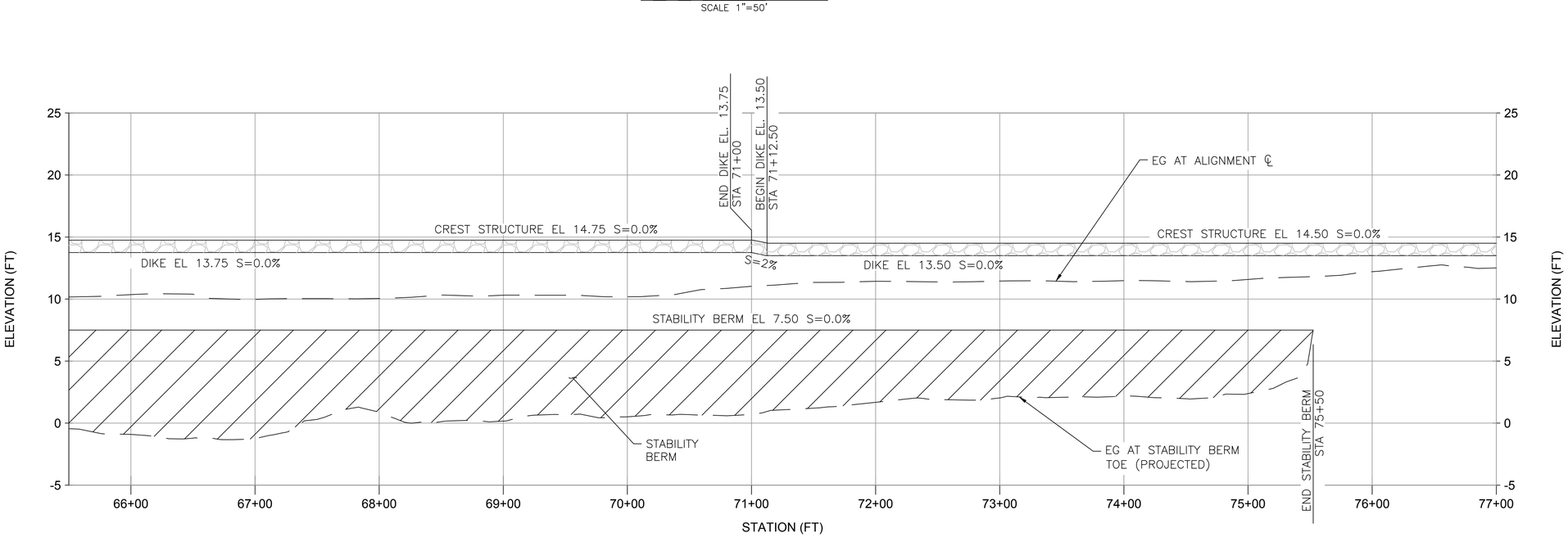
SCALE: 1"=3000'



PROFILE
SCALE: 1"=50' H 1"=5' V

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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 14

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
CAUTION: CHECK TRACING FOR LATEST REVISIONS					

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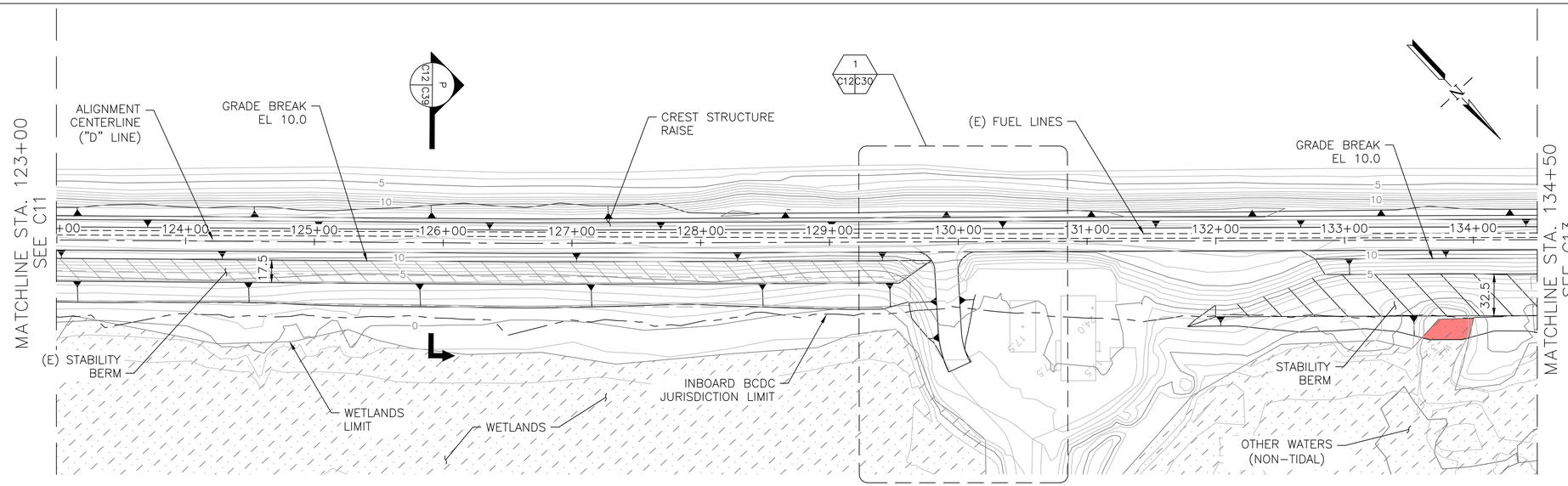
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 65+50 – STA 77+00

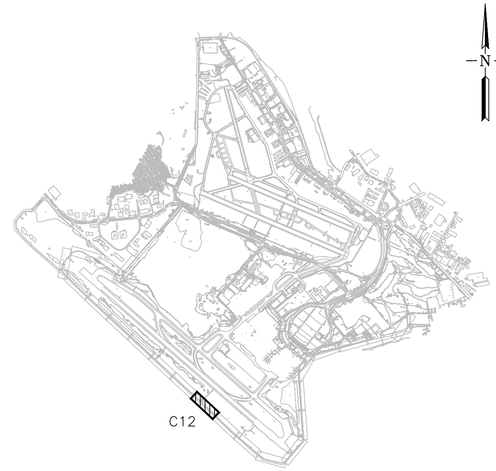
DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 12 OF 52 SHEETS
C7 AA-4172

PRINT DATE 07-13-17 16:43:57 L:\Projects\Legacy\EV\PortOfOakland\268164\3\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\60% Drawings with Impacts shown\C7 with impacts.dwg Printed by steven.tough

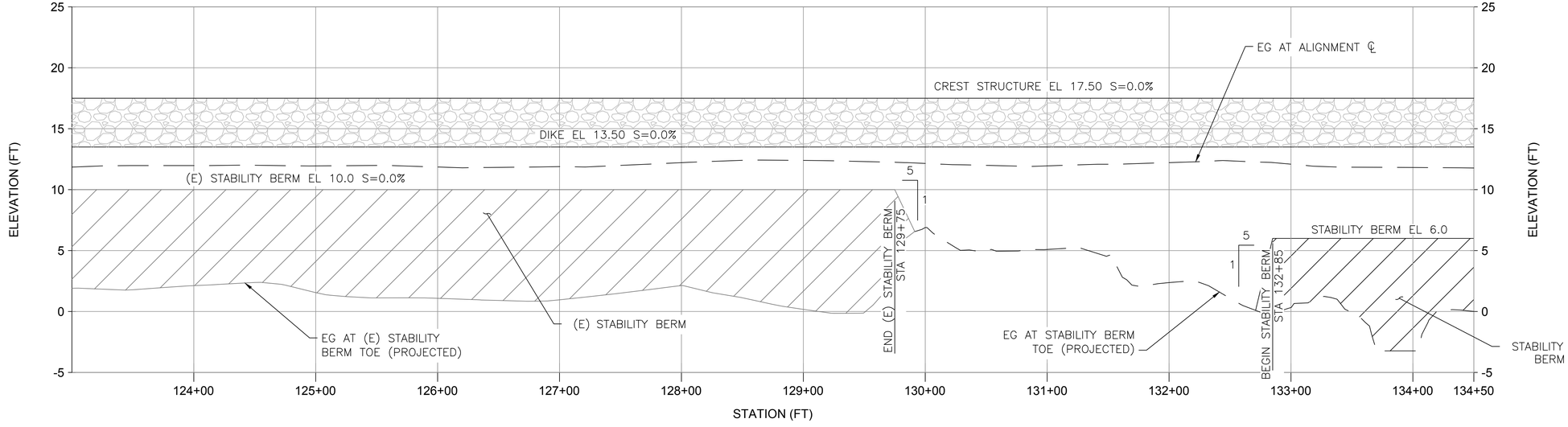


PLAN
SCALE: 1"=50'

50' 0 50' 100'
SCALE 1"=50'



KEYMAP
SCALE: 1"=3000'



PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 15

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:
PLANS
FIELD BOOKS

ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988

CAUTION:
CHECK TRACING FOR LATEST REVISIONS

NO.	REVISIONS	DATE	REV'D	APP'D

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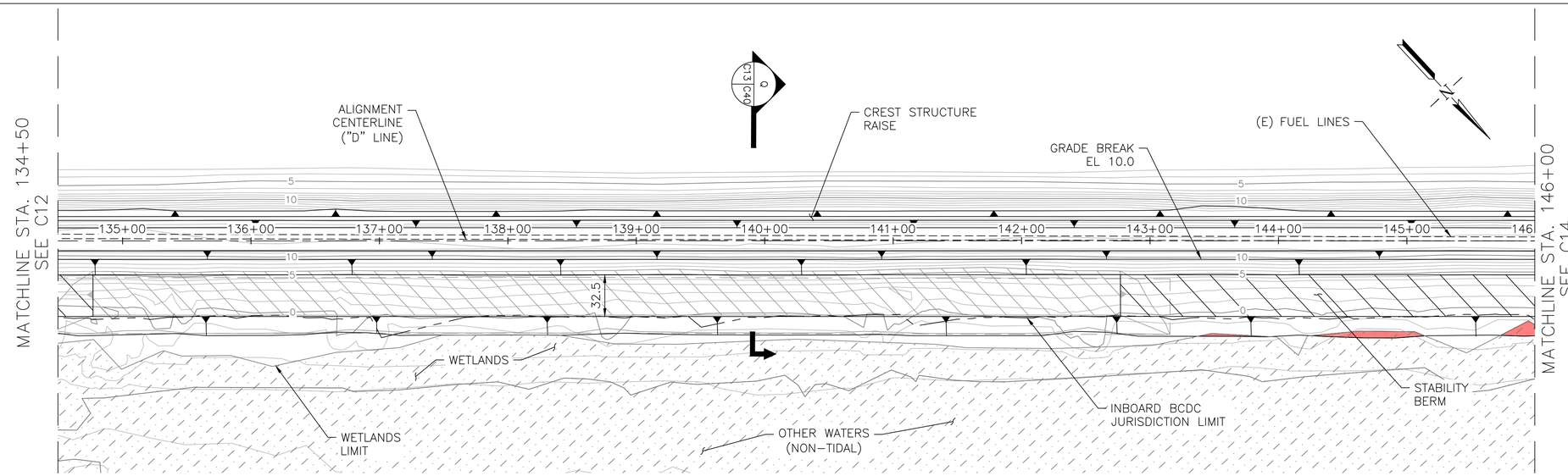
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 123+00 – STA 134+50

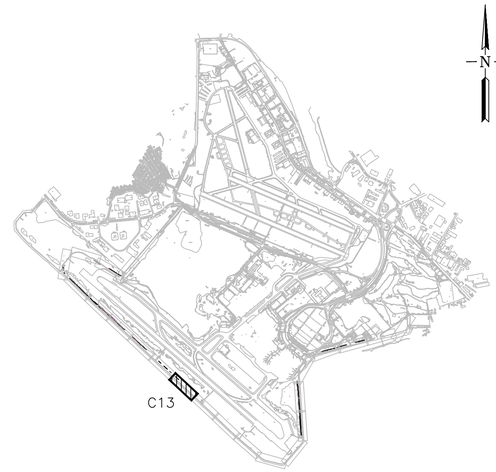
DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 17 OF 52 SHEETS
C12 AA-4172

PRINT DATE 07-13-17 16:42:58 L:\Projects\Legacy\EV\PortOfOakland\268164\3\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\60% Drawings with Impacts shown\C12 with impacts.dwg Printed by steven.tough

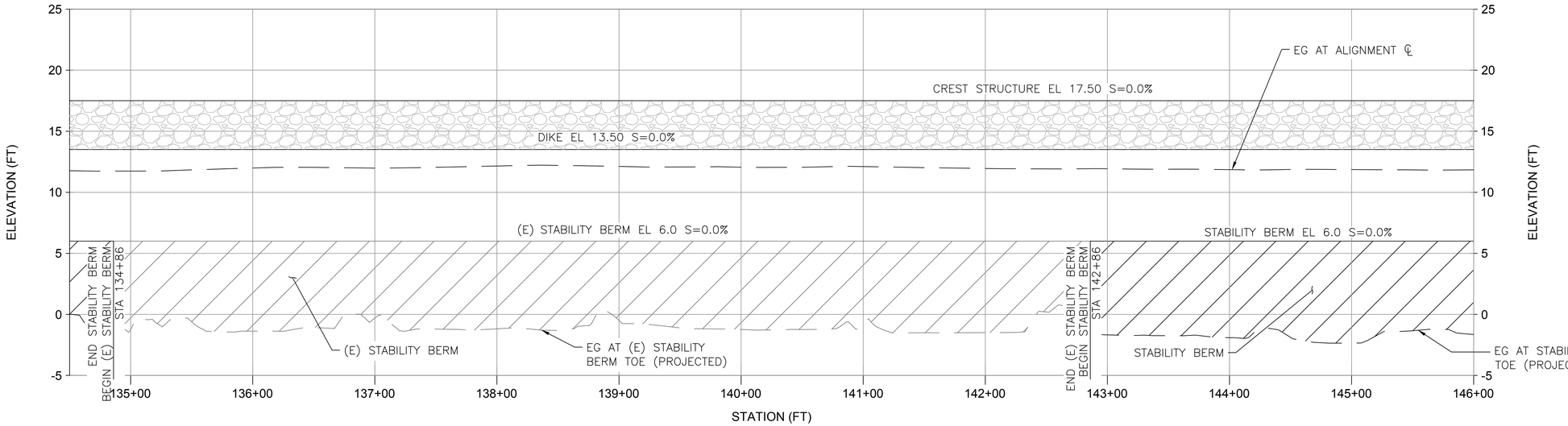


PLAN
SCALE: 1"=50'

50' 0 50' 100'
SCALE 1"=50'



KEYMAP
SCALE: 1"=3000'



PROFILE
SCALE: 1"=50' H 1"=5' V

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 16

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
CAUTION: CHECK TRACING FOR LATEST REVISIONS					

DRAWN S. TOUGH
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CHECKED J. ROADIFER
REG. ENGINEER NO.

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Fax: (510) 874-3268

OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 134+50 – STA 146+00

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 18 OF 52 SHEETS
C13 AA-4172

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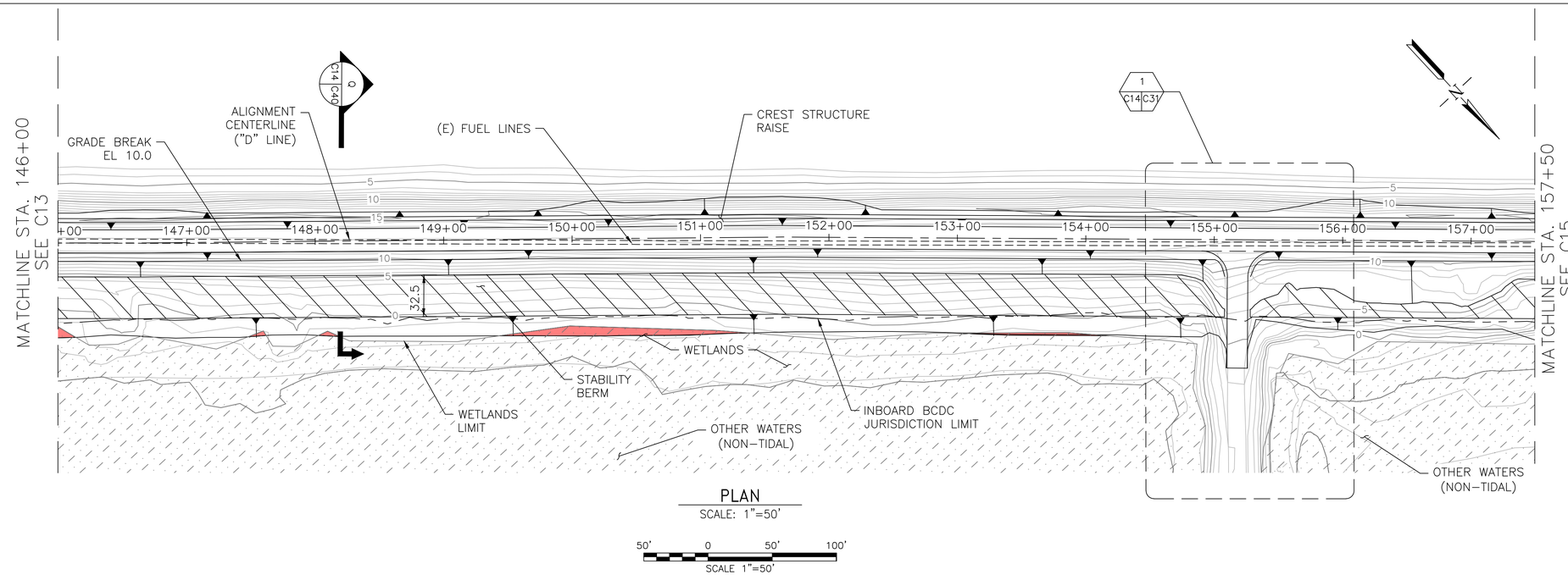

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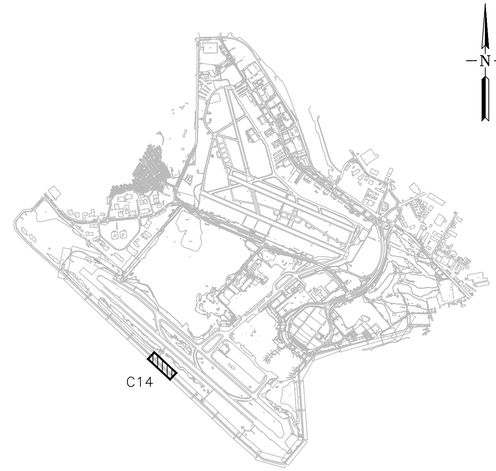

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PROFILE
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SCALE 1"=50' HORIZONTAL

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SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 17

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

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REFERENCES:
PLANS
FIELD BOOKS

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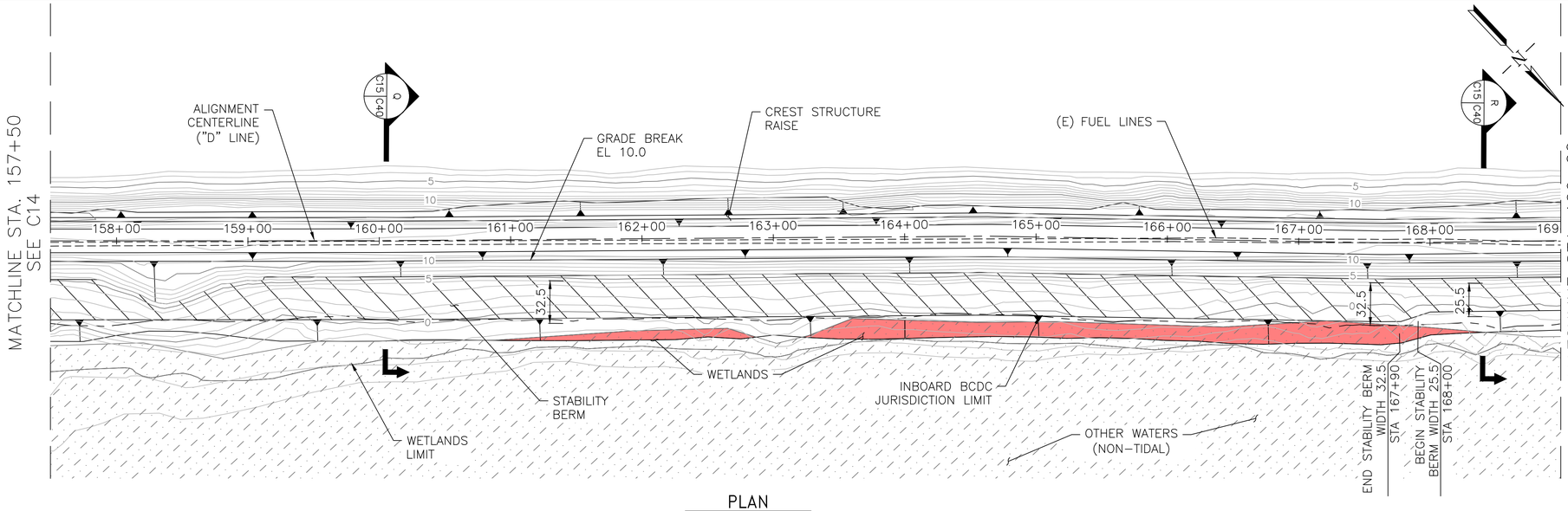
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 146+00 – STA 157+50

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 19 OF 52 SHEETS
C14 AA-4172

PRINT DATE 07-13-17 16:50:23 L:\Projects\Legacy\EV\PortOfOakland\268164\3\09_CADD\2016 Design\05_Temporary Working Documents and Sketches\Tuffy\Wetland Impacts\



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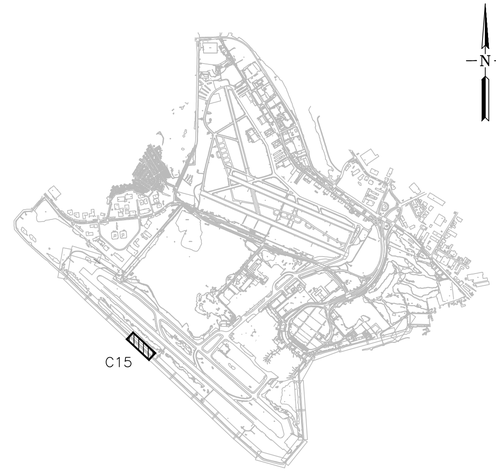

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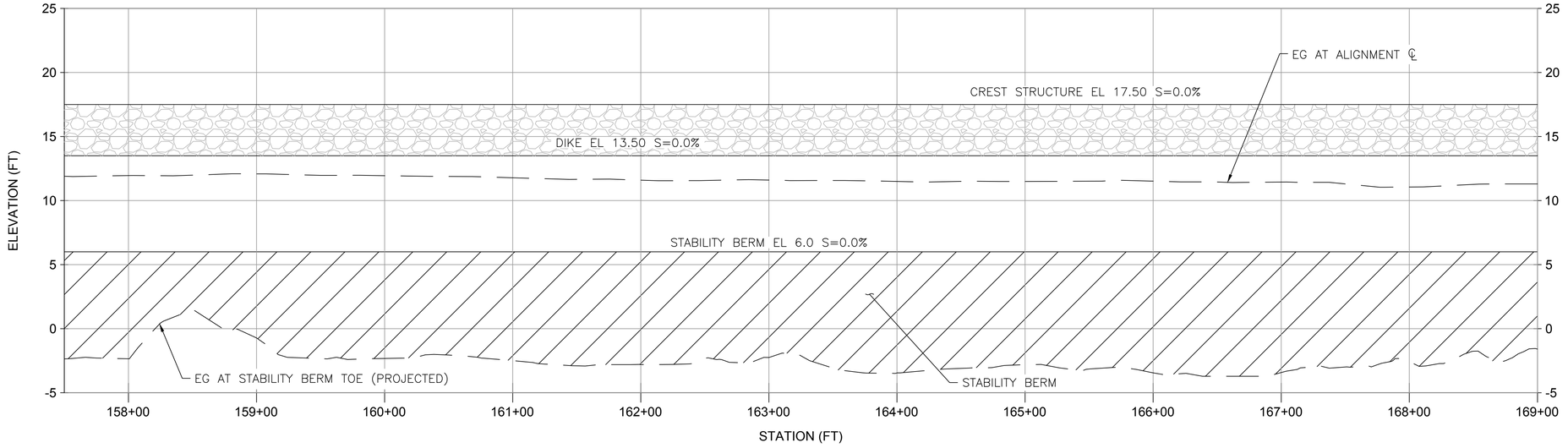

PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 18

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

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REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
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OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 157+50 – STA 169+00

DATE: 5/26/2017
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SHEET: 20 OF 52 SHEETS
C15 AA-4172

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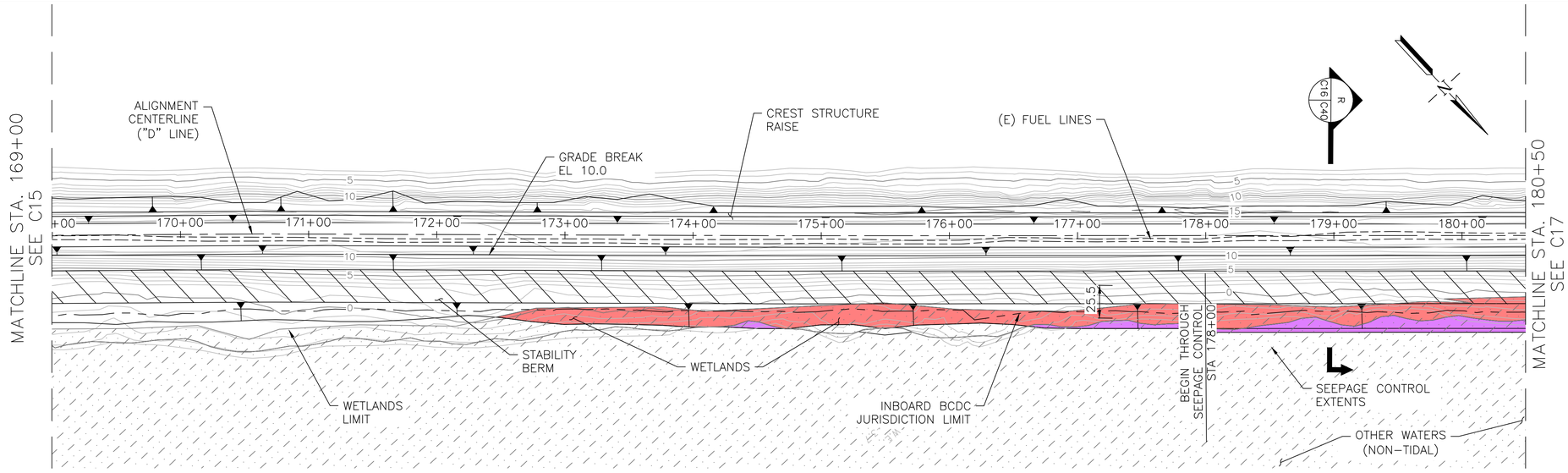

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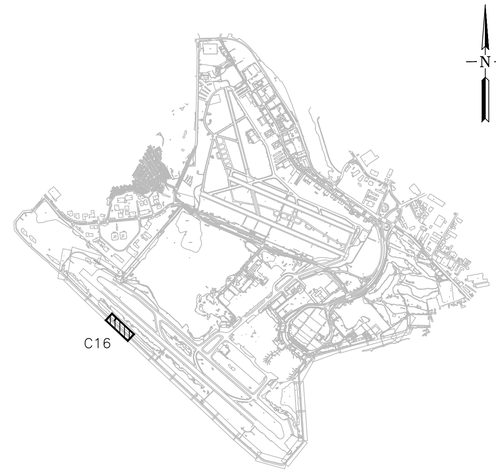

KEYMAP
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PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 19

PROJECT NO. A20039201

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REFERENCES:
PLANS
FIELD BOOKS

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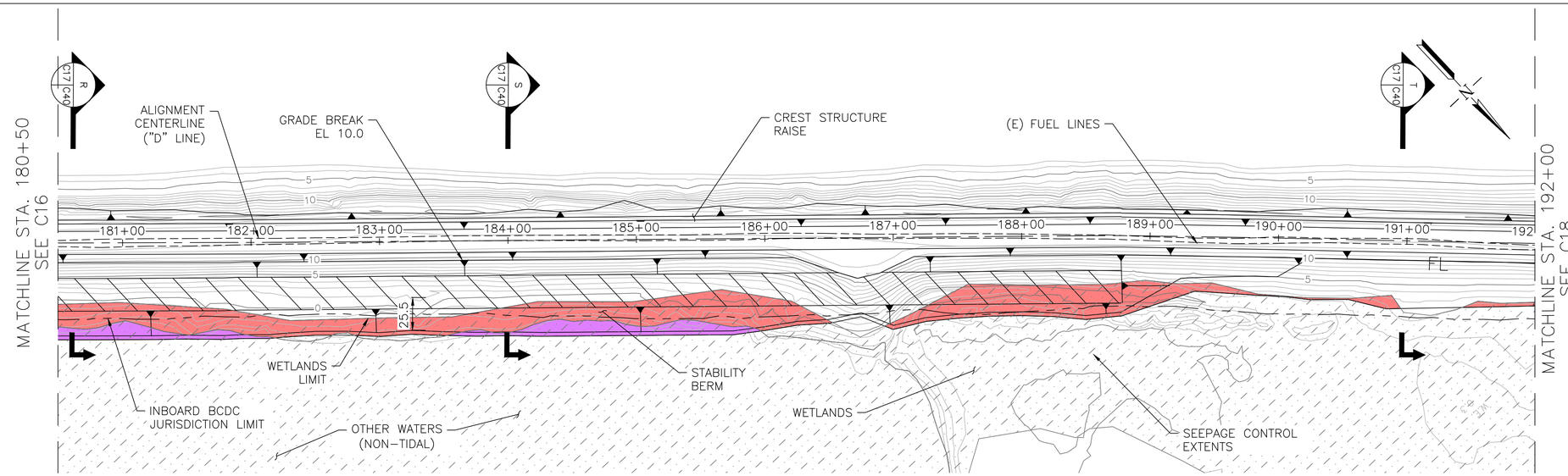
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 169+00 – STA 180+50

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 21 OF 52 SHEETS
C16 AA-4172



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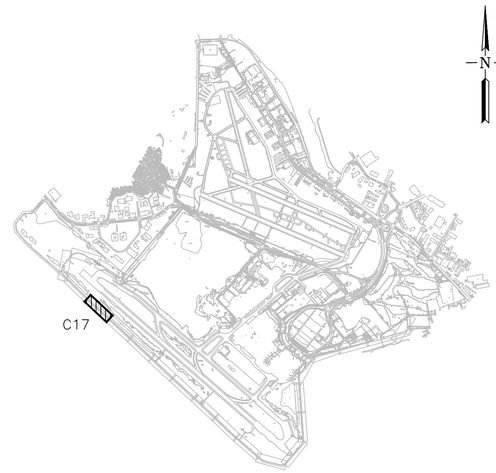

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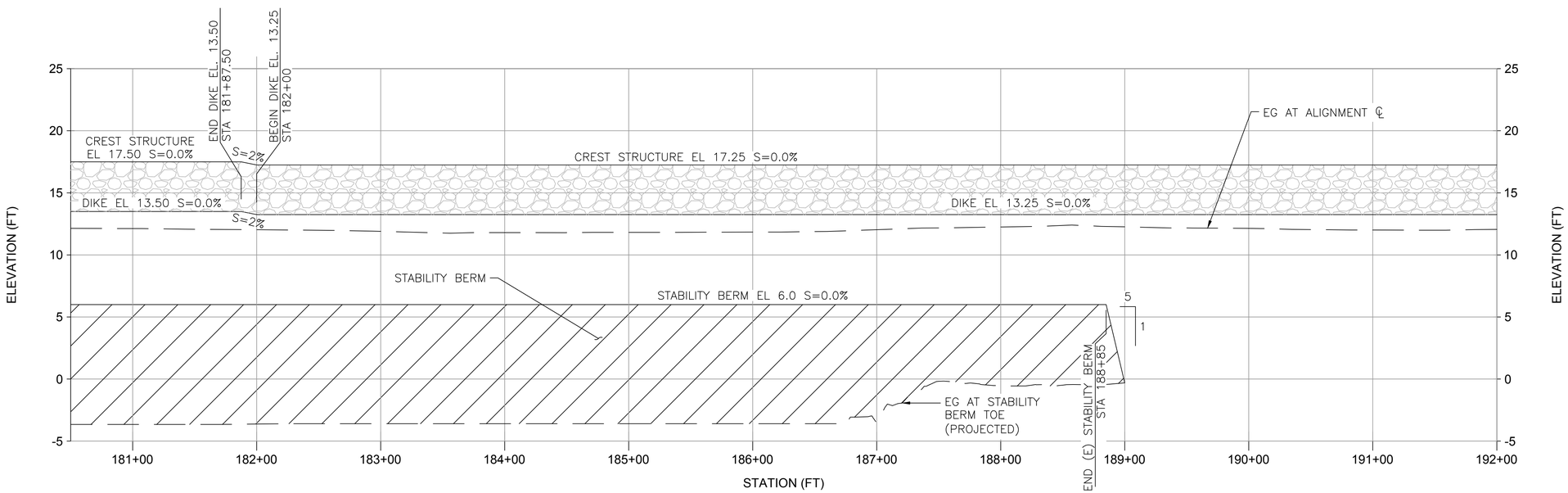

PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 20

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

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REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988					
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OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 180+50 – STA 192+00

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 22 OF 52 SHEETS
C17 AA-4172

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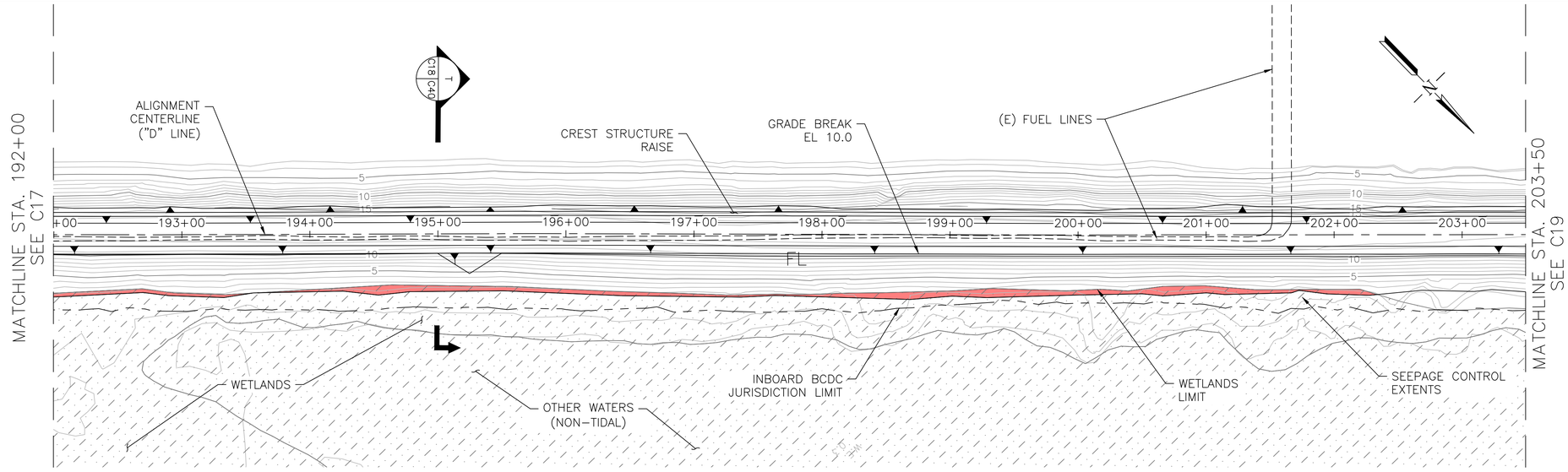

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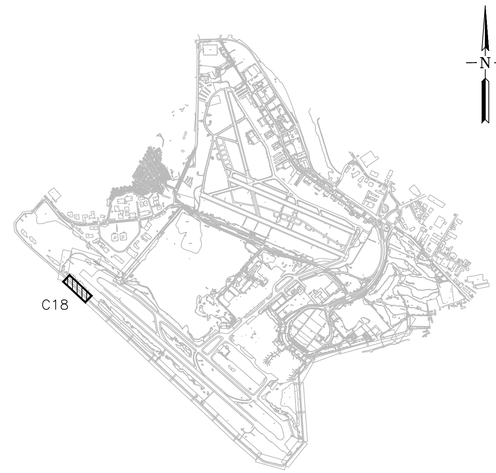

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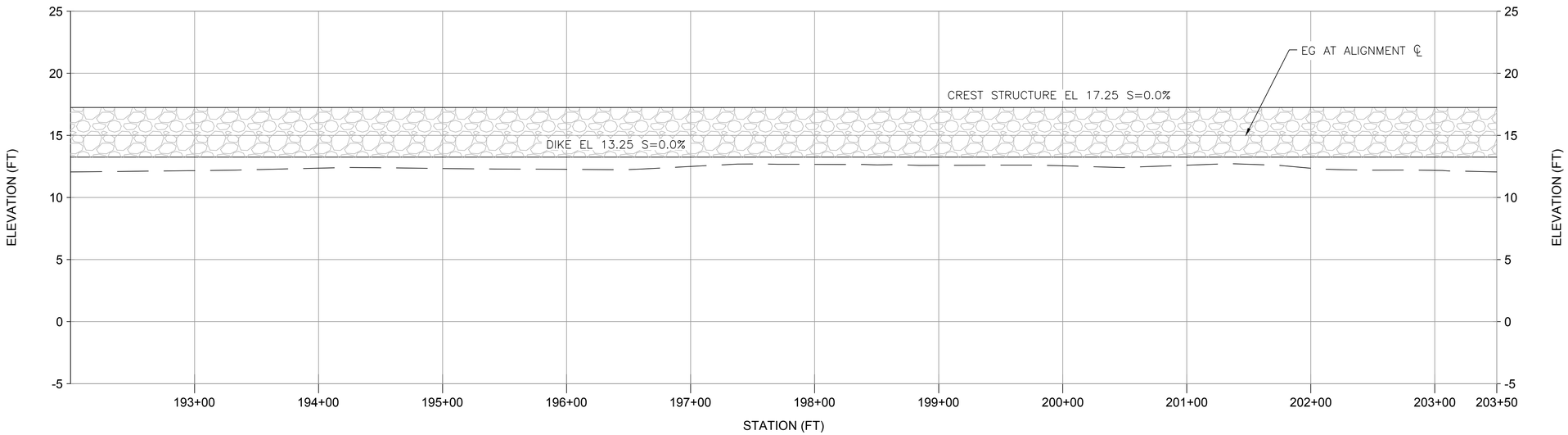

PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 21

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

REFERENCES:	NO.	REVISIONS	DATE	REV'D	APP'D
PLANS					
FIELD BOOKS					
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PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 192+00 – STA 203+50

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 23 OF 52 SHEETS
C18 AA-4172

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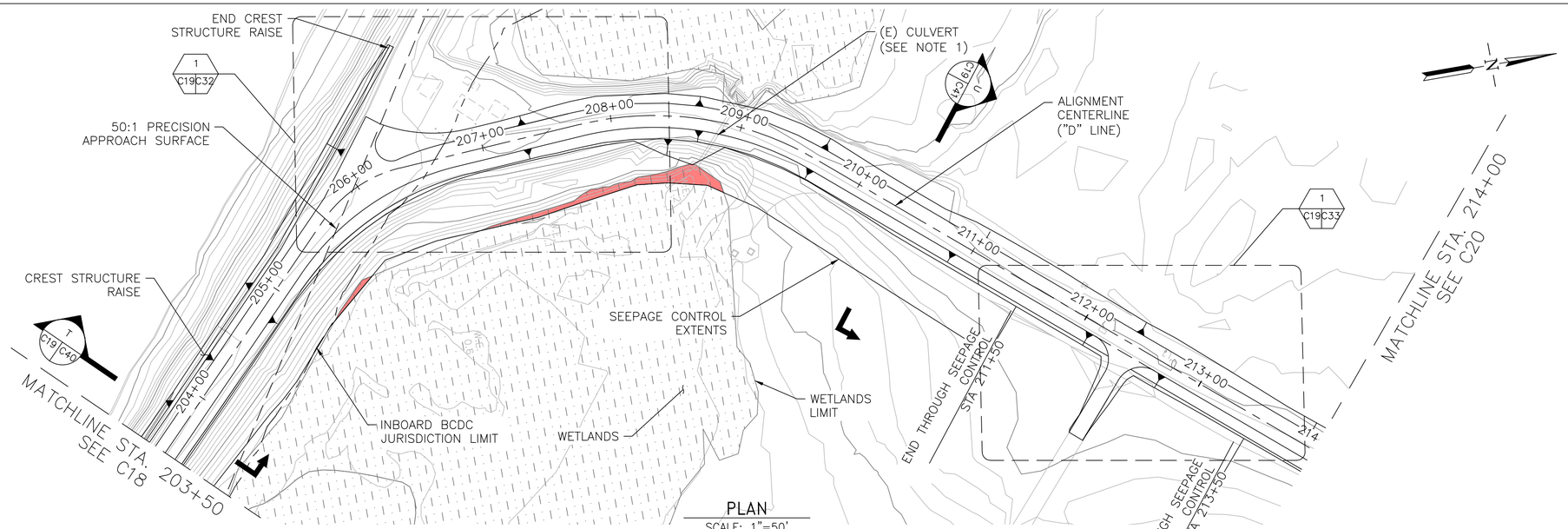

PLAN
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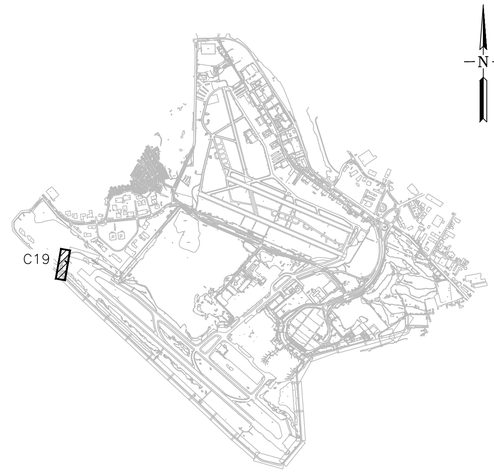
SCALE 1"=50'



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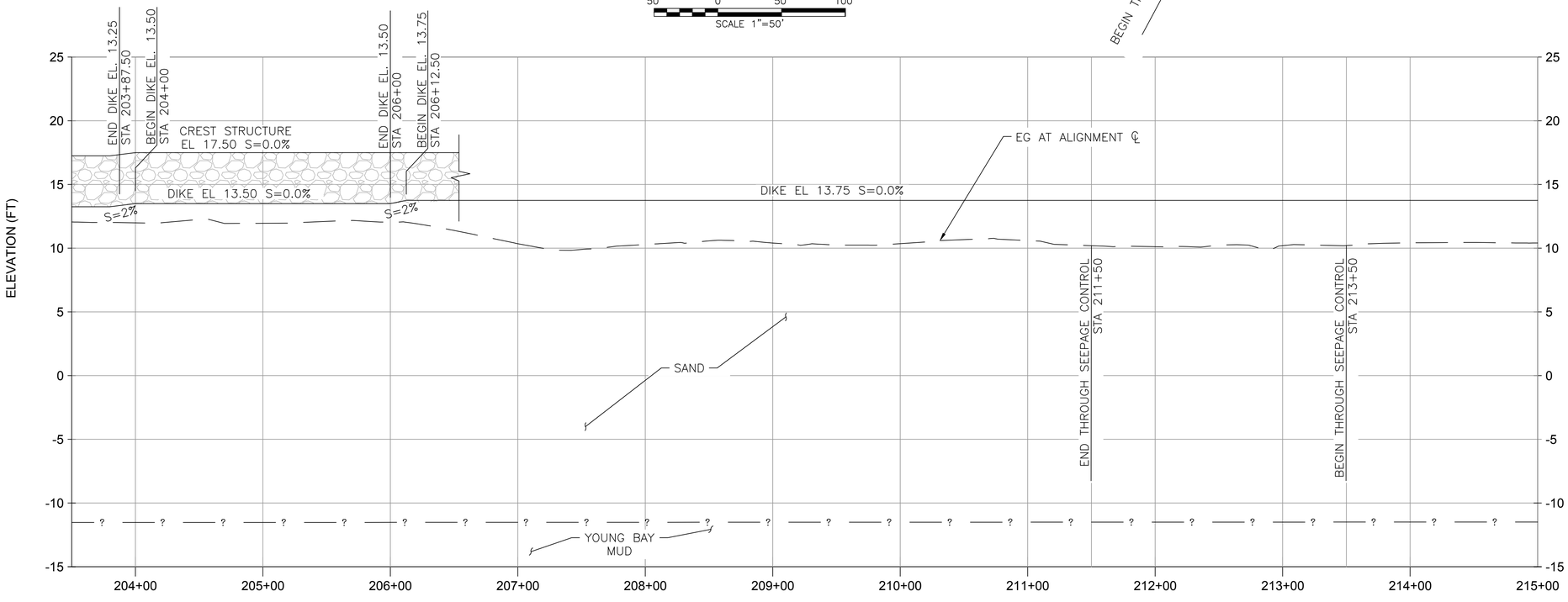

PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

NOTES:

1. (E) CULVERT, OPTION 1 – PROVIDE (N) SLIDING GATE ON WATER SIDE OF CULVERT. OPTION 2 – PROVIDE (N) 6"ø PIPE THROUGH (E) CULVERT, BACKFILL (E) CULVERT WITH CLSM, PROVIDE (N) VALVE.
2. SEE C44 FOR ALIGNMENT ℄ SET–OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

Figure 22

PROJECT NO. A20039201

REFERENCES:
PLANS
FIELD BOOKS

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REG. ENGINEER NO.

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PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 203+50 – STA 215+00

DATE: 5/26/2017
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C19 | AA–4172

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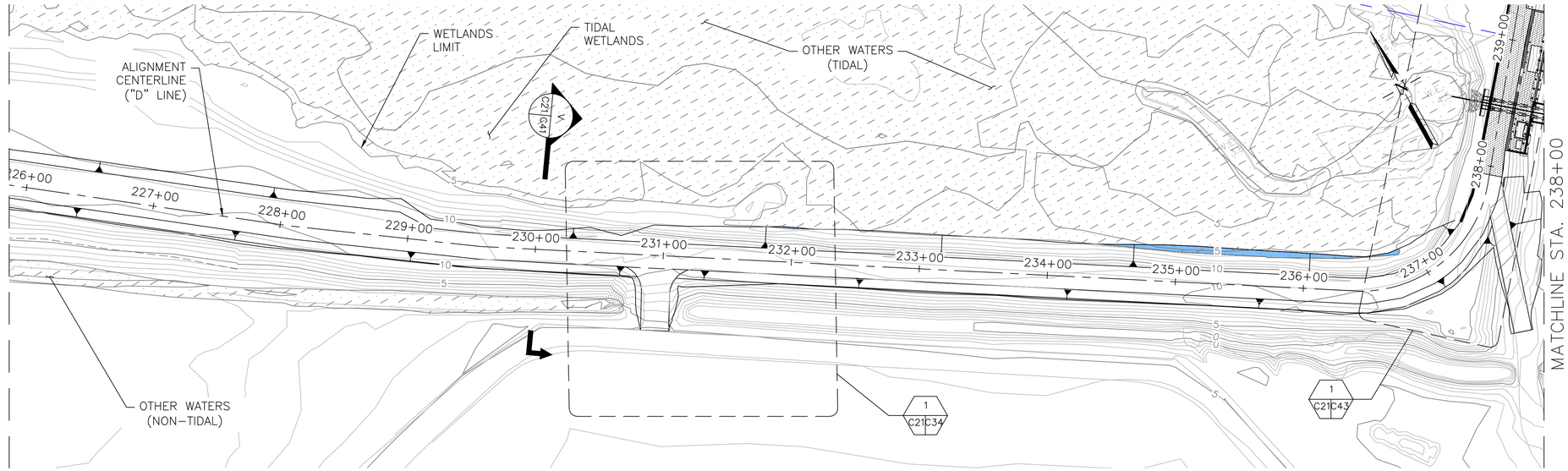

PLAN
SCALE: 1"=50'

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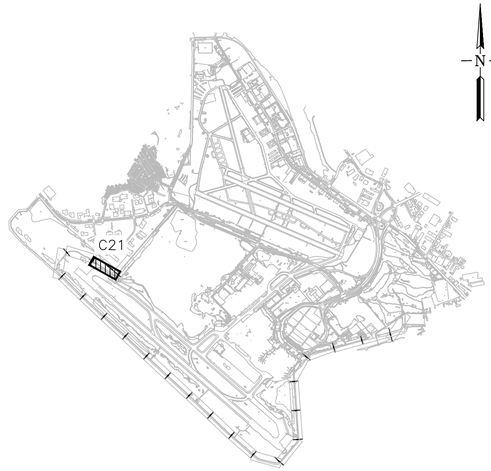
SCALE 1"=50'



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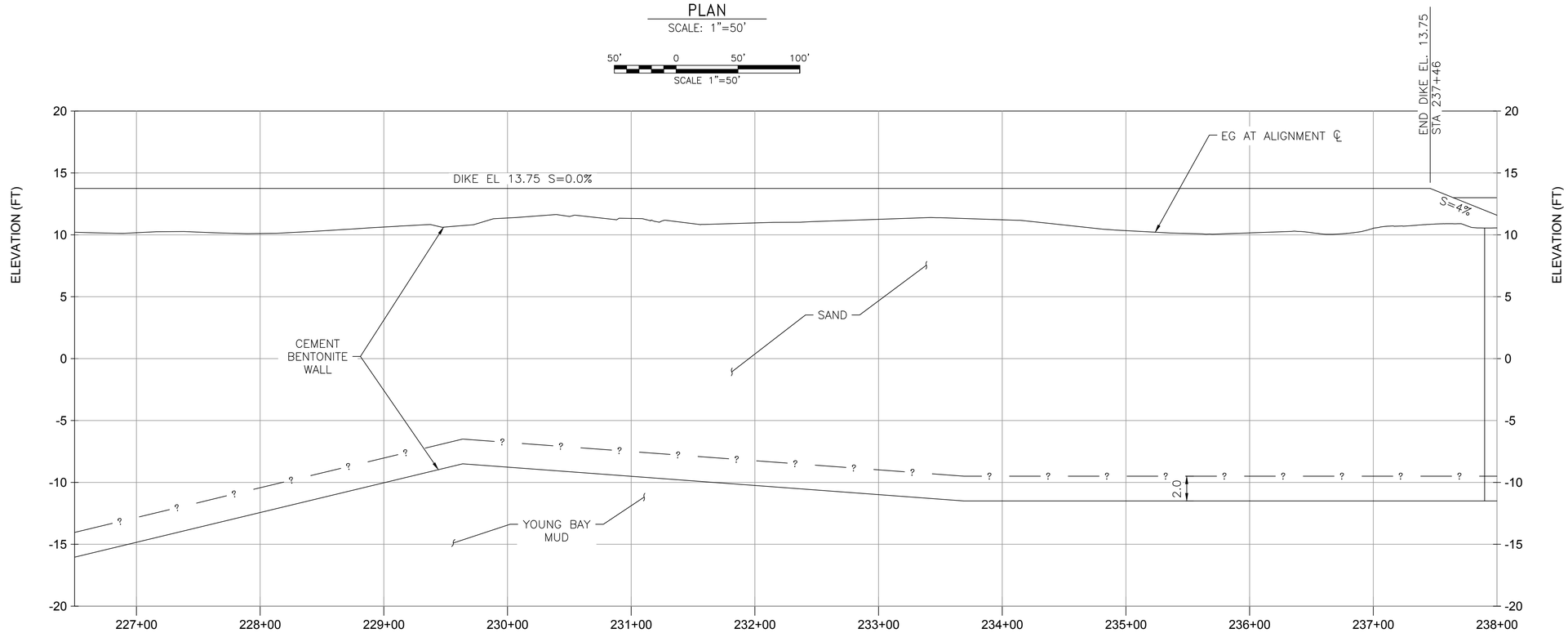

PROFILE
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SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

PERMANENT WETLAND IMPACTS – TIDAL

Figure 23

PROJECT NO. A20039201

CAUTION: THIS PLAN MAY BE REDUCED 0 1" 2" ORIGINAL SCALE

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REFERENCES:
PLANS
FIELD BOOKS

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PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 226+50 – STA 238+00

DATE: 5/26/2017
SCALE: AS SHOWN
SHEET: 26 OF 52 SHEETS
C21 AA-4172

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Appendix B

Addendum to February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS
828 MISSION AVENUE, SAN RAFAEL, CA 94901 • 415.925.2000 • WWW.H-BGROUP.COM

August 29, 2017

Ms. Colleen Liang
Environmental Programs and Planning
Port of Oakland
530 Water Street
Oakland, CA 94607

Subject: Addendum to *Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project* dated February 2016.

Dear Ms. Liang:

On behalf of the Port of Oakland (Port), Huffman-Broadway Group, Inc. (HBG) has prepared an addendum to the *Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project* dated February 2016 (2016 BA).

The Port proposes to implement the Airport Perimeter Dike Improvement Project (Proposed Action). The Proposed Action involves constructing improvements to the Airport's perimeter dike to comply with FEMA requirements for 100-year flood protection and address sea level rise[1]. The 2016 BA evaluated potential effects of the Proposed Action on Waters of the U.S. (WOUS) and Waters of the State (WOS) as well as species listed as endangered or threatened, or proposed for listing as endangered or threatened, under Section 7 of the federal Endangered Species Act (ESA). The 2016 BA included conservation measures that the Port will implement to avoid, minimize, and mitigate for potential effects on these biological resources.

Following completion of the 2016 BA the Port made modifications to the Proposed Action. These modifications will result in the placement of fill material into two wetland areas not previously addressed in the 2016 BA. The first area is northwest of Runway 12 end near the perimeter dike between Station 206+00 to 209+00 (refer to Exhibit 1) and the second area is northeast of Runway 12 end between Station 234+00 to 237+00 (refer to Exhibit 2).

The purpose of this Addendum is to assess impacts that may occur within these two areas that were not addressed in the 2016 BA and determine if conservation measures originally presented in the 2016 BA to avoid, minimize and mitigate adequately cover these additional impacts.

[1] The previous project description included improvements to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake. However, due to funding constraints, the seismic improvements will not be conducted as part of the current improvement project.

1. EXECUTIVE SUMMARY

Our analysis included field work conducted on August 8, 2017, review of Sheet C19 and Sheet C21 of the design plans titled *Oakland International Airport Perimeter Dike Improvement Project* dated May 26, 2017 (Design Plans), and review of the 2016 BA.

Based on data collected during our field work and review of the Design Plans of the additional areas that were not addressed in the 2016 BA, HBG determined the following:

1. 0.026 acre (1,114 sq. ft.) of nontidal wetlands will be permanently impacted between Station 206+00 to 209+00, and, based on the 2016 BA, are considered marginally suitable habitat for the salt marsh harvest mouse and Ridgeway's rail;
2. 0.019 acre (845 sq. ft.) of tidal wetlands will be permanently impacted between Station 234+00 to 237+00, and, based on the 2016 BA, are considered marginally suitable habitat for Ridgway's rail;
3. The conservation measures to avoid, minimize and mitigate impacts to wetlands, the salt marsh harvest mouse and Ridgway's rail, presented in the 2016 BA, will adequately cover additional impacts noted in this addendum.

2. STATION 206+00 TO 209+00

2.1 Site Conditions

The top of the dike is an active and maintained access road consisting of compacted gravel. The slopes of the dike consist of rock rip-rap and is dominated by ice plant (*Carpobrotus chilensis*: FACU) with patches of wild oats (*Avena fetua*: Upland [UPL]), and soft brome (*Bromus hordeaceus*: FACU). Near the toe-of-slope the vegetation shifts and is dominated by pickleweed (*Salicornia pacifica*: Obligate Wetland [OBL]) with patches of salt grass (*Distichlis spicata*: FAC), and annual rabbits-foot grass (*Polypogon monspeliensis*: FAC Wetland [W]). The vertical structure of the pickleweed is very low to the surface (approximately 6-12 inches in vertical height) and does not provide suitable cover for adult or juvenile Ridgeway's rail.

2.2 Wetland Impact

Improvements to the dike between Station 206+00 to 209+00 will raise the elevation approximately 1-4 feet to an approximate target elevation of 13.75 feet NAVD88. Implementation will require placing fill on the top of the dike, and along the side slopes of the dike down to the toe-of-slope. This will result in the permanent loss of 0.026 acre (1,114 sq. ft.) of nontidal wetlands.

2.3 Salt Marsh Harvest Mouse Impact

Based on current site conditions and data presented in the 2016 BA the potential for salt marsh harvest mouse to occur in the nontidal wetlands between Station 206+00 to 209+00 is extremely small, and it is probable that this species does not occur at this location. As shown in Figure 3-2 in the 2016 BA, the nontidal wetland found between Stations 206+00 to 209+00 is designated as "M*arginally Suitable for Salt Marsh Harvest Mouse*". Therefore, impacts to the 0.026 acre of nontidal wetlands would be considered a permanent impact to vegetation marginally suitable for the salt marsh harvest mouse.

2.4 Ridgway's Rail Impact

Based on current site conditions and data presented in the 2016 BA the potential for Ridgway's rails to occur in the nontidal wetlands between Station 206+00 to 209+00 is extremely small, and it is probable that this species will not be present during construction at this location. As shown in Figure 3-1 in the 2016 BA, the nontidal wetland found between Stations 206+00 to 209+00 is designated as "Marginally *Suitable Habitat for Ridgway's Rail*". Therefore, impacts to the 0.026 acre of nontidal wetlands would be considered a permanent impact to vegetation marginally suitable for the Ridgeway's rail.

3. STATION 234+00 TO 237+00

3.1 Site Condition

The top of the dike is an active and maintained access road consisting of compacted gravel. The slopes of the dike consist of rock rip-rap and is dominated by ice plant (*Carpobrotus chilensis*: FACU). Near the toe-of-slope the vegetation shifts and is dominated by fleshy jaumea (*Jaumea carnosa*: Obligate Wetland [OBL]). The vertical structure of the fleshy jaumea is very low to the surface (approximately 6 inches in vertical height). The nearest area of dense pickleweed and/or cordgrass is approximately 30 linear feet to the north.

3.2 Wetland Impact

Improvements to the dike between Station 234+00 to 237+00 will raise the elevation approximately 1-4 feet to an approximate target elevation of 13.75 feet NAVD88. Implementation will require placing fill on the top of the dike, and along the side slopes of the dike down to the toe-of-slope. This will result in the permanent loss of 0.019 acre (845 sq. ft.) of tidal wetlands.

3.3 Salt Marsh Harvest Mouse Impact

Based on current site conditions and data presented in the 2016 BA, the potential for salt marsh harvest mouse to occur in the tidal wetlands between Station 234+00 to 237+00 is unlikely. As shown in Figure 3-2 in the 2016 BA, the tidal wetland found between Stations 234+00 to 237+00 is designated as "*Unsuitable for Salt Marsh Harvest Mouse*".

3.4 Ridgway's Rail Impact

Based on current site conditions and data presented in the 2016 BA the potential for Ridgway's rails to occur in the nontidal wetlands between Station 234+00 to 237+00 is extremely small, and it is probable that this species will not be present during construction at this location.

As shown in Figure 3-1 in the 2016 BA, the nontidal wetland found between Stations 234+00 to 237+00 is designated as "M*arginally Suitable for Ridgway's Rail*". Therefore, impacts to the 0.019 acre of tidal wetlands would be considered a permanent impact to vegetation marginally suitable for the Ridgway's rail.

4. SUMMARY OF FINDINGS AND CONCLUSION

Based on HBG's field observation, review of the Design Plans, and review of the 2016 BA the Port's modifications to the Proposed Action:

1. will include additional permanent impacts to nontidal wetland by approximately 0.026 acre and tidal wetland impacts by approximately 0.019 acre that were not originally assessed in the 2016 BA;
2. will permanently affect 0.026 acre of nontidal wetland designated in the 2016 BA as "M*arginally Suitable for Salt Marsh Harvest Mouse*"; and
3. will permanently affect 0.026 acre of nontidal wetlands and 0.019 acre of tidal wetlands designated in the 2016 BA as "M*arginally Suitable for Ridgway's Rail*".

The extent and location of these modifications and additional impacts are well within the scope of analysis of the 2016 BA. The Port will implement construction BMPs and species-specific conservation measures outlined in the 2016 BA to avoid, minimize, and mitigate for affects to WOUS and/or WOS, potential habitat for listed species, and other biological resources (e.g. nesting birds etc.) as presented in the 2016 BA.

This determination is consistent with the 2016 BA; however, HBG recommends that the Port reassess the salt marsh harvest mouse and Ridgway's rail habitats as some areas did not provide suitable vegetation cover for these species.

If you have any questions regarding this Addendum, please contact me at 415.385.4106; rperrera@h-bgroup.com.

Sincerely,

Robert F. Perrera

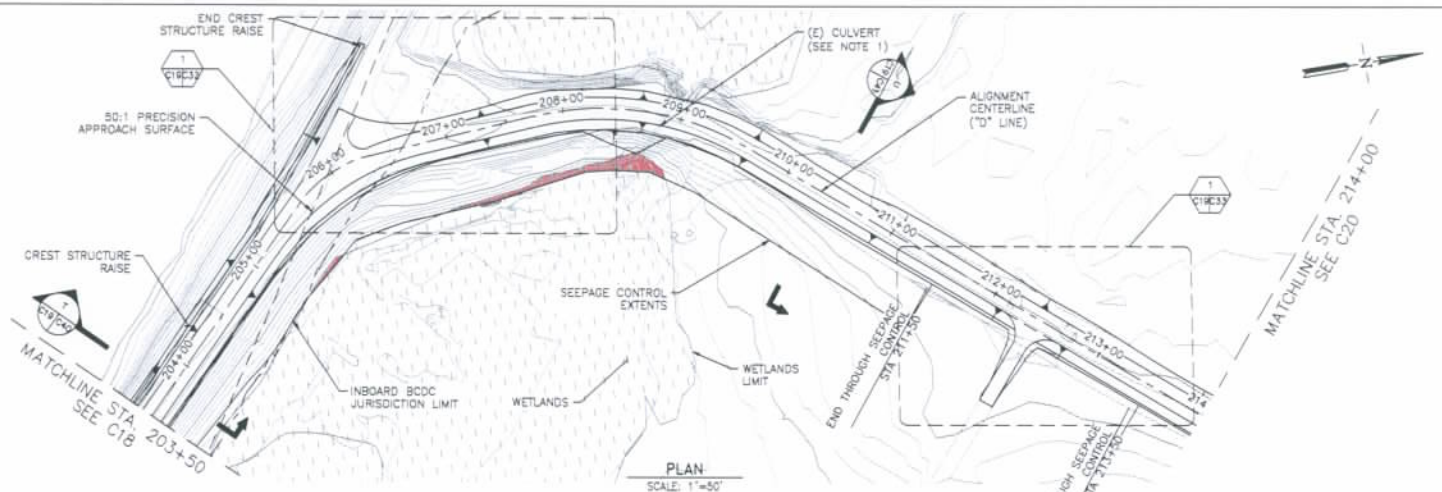
Robert F. Perrera
Wetland Regulatory Scientist

Enclosures

Exhibit 1. Sheet C19, Station 206+00 to 209+00
Exhibit 2. Sheet C21, Station 234+00 to 237+00

Exhibit 1

Sheet C19, Station 206+00 to 209+00



PLAN
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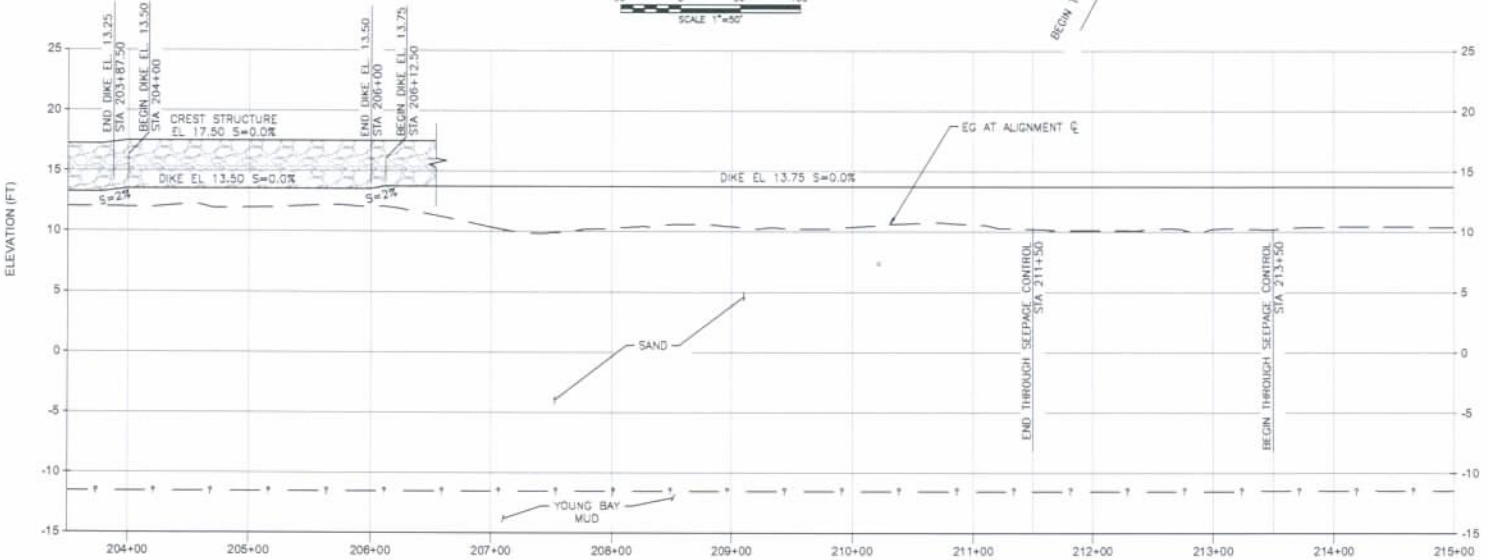

PROFILE
SCALE: 1"=50' H 1"=5' V

KEYMAP
SCALE: 1"=3000'

NOTES:

1. (E) CULVERT, OPTION 1 – PROVIDE (N) SLIDING GATE ON WATER SIDE OF CULVERT. OPTION 2 – PROVIDE (N) 6"ø PIPE THROUGH (E) CULVERT, BACKFILL (E) CULVERT WITH CLSM, PROVIDE (N) VALVE.
2. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

- PERMANENT WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS (OTHER WATERS)

50' 0 50' 100'
SCALE 1"=50' HORIZONTAL

5' 0 5' 10'
SCALE 1"=5' VERTICAL

CAUTION: THIS PLAN MAY BE REDUCED

0 1" 3" ORIGINAL SCALE

PROJECT NO. A20039201

60% DESIGN
NOT FOR CONSTRUCTION

REFERENCES:
PLANS
FIELD BOOKS

ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988

CAUTION:
CHECK TRACING FOR LATEST REVISIONS

NO.	REVISIONS	DATE	REV'D	APP'D

DRAWN S. TOUGH
DESIGNED S. TOUGH
CHECKED J. ROADIFER
REG. ENGINEER NO.

PORT OF OAKLAND
530 WATER ST. OAKLAND, CALIFORNIA

URS
300 LAKESIDE DR, 4TH FLOOR
OAKLAND, CA 94612
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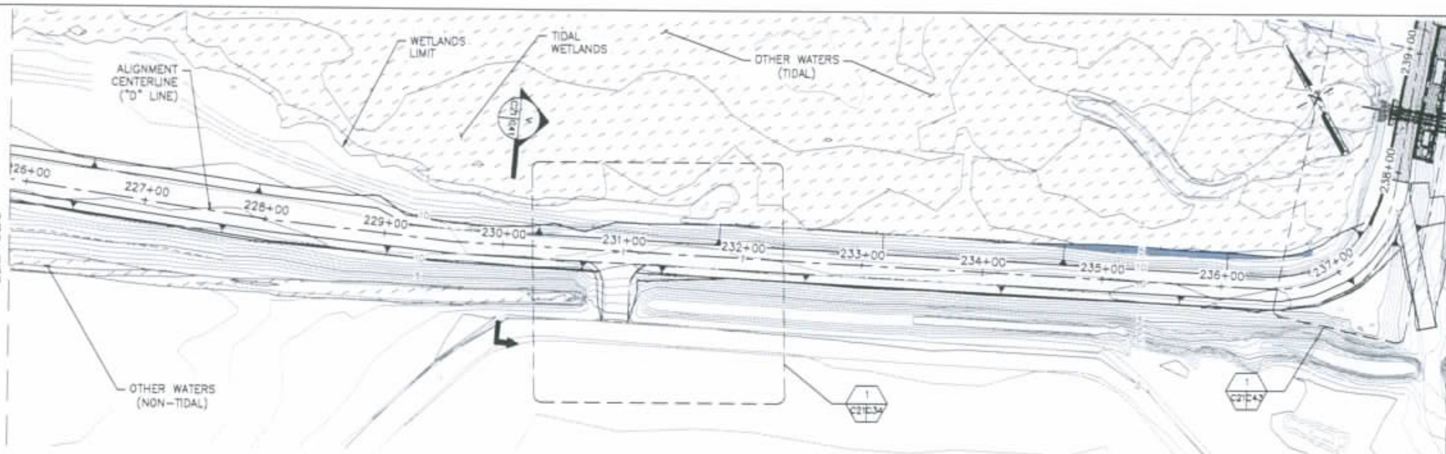
OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 203+50 – STA 215+00

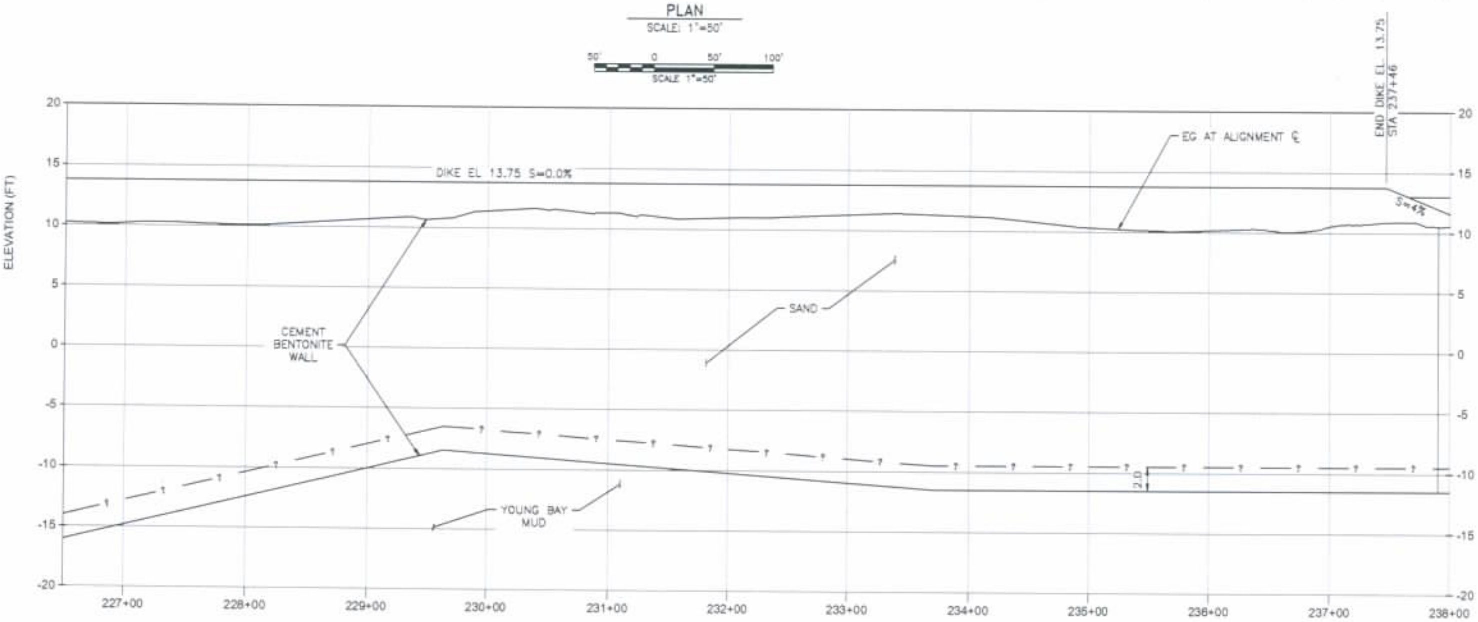
DATE: 5/25/2017
SCALE: AS SHOWN
SHEET: 24 OF 52 SHEETS
C19 AA-4172

Exhibit 2

Sheet C21, Station 234+00 to 237+00



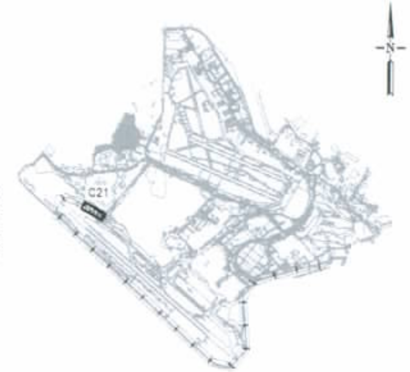
PLAN
SCALE: 1"=50'



PROFILE
SCALE: 1"=50' H 1"=5' V

SCALE 1"=50' HORIZONTAL

SCALE 1"=5' VERTICAL



KEYMAP
SCALE: 1"=3000'

NOTES:

1. SEE C44 FOR ALIGNMENT ℄ SET-OUT DETAILS.

LEGEND

PERMANENT WETLAND IMPACTS – TIDAL

PROJECT NO. A20039201

REFERENCES:
PLANS
FIELD BOOKS

ALL ELEVATIONS BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988

CAUTION: CHECK TRACING FOR LATEST REVISIONS

NO.	REVISIONS	DATE	REV'D	APP'D

DRAWN S. TOUGH
DESIGNED S. TOUGH
CHECKED J. ROADIFER

CAUTION: THIS PLAN MAY BE REDUCED — ORIGINAL SCALE

PORT OF OAKLAND
530 WATER ST. OAKLAND, CALIFORNIA

URS
300 LAKESIDE DR. 4TH FLOOR
OAKLAND, CA 94612

60% DESIGN
NOT FOR CONSTRUCTION

OAKLAND INTERNATIONAL AIRPORT
PERIMETER DIKE IMPROVEMENT PROJECT
DIKE IMPROVEMENTS, STA 226+50 – STA 238+00

DATE: 5/25/2017
SCALE: AS SHOWN
SHEET 26 OF 52 SHEETS
C21
AA-4172

2nd Addendum to the Initial Study/Mitigated Negative Declaration

For the South Field Perimeter Dike Improvement Project At Oakland International Airport

(SCH No. 2015092045)

Prepared by the Port of Oakland

April 2018

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1.0 PROJECT DESCRIPTION

1.1 Introduction

On December 17, 2015, the Board of Port Commissioners, acting on behalf of the Port of Oakland ("Port"), adopted the Airport Perimeter Dike FEMA and Seismic Improvement Project ("APD Project") Initial Study/Mitigated Negative Declaration ("2015 APD IS/MND") (URS, 2015b). The 2015 APD IS/MND evaluated the potential impacts associated with the implementation of the APD Project. Since the adoption, the APD Project has been restructured to deliver the improvements in two phases, in order to align available funding with the anticipated costs of the improvements. Phase 1 will complete construction of flood protection measures and meet standards required by the Federal Emergency Management Administration ("FEMA") to certify the dike. Phase 2 will construct improvements necessary to protect the dike from catastrophic damage during a major earthquake.

In September 2017, the Port prepared an addendum to the 2015 APD IS/MND ("2017 Addendum") to assess subsequent revisions to the APD Project which included impacting additional tidal wetlands and non-tidal other waters of the U.S.

This second addendum to the 2015 APD IS/MND addresses additional revisions to the APD Project (at Stations 231+00 and 237+00 of the perimeter dike), which includes one new area of impact to non-tidal other waters of the U.S.

1.2 Project Improvements

The APD Project is being undertaken by the Port in response to FEMA requirements for the certification of the perimeter dike for 100-year flood protection, to reduce the vulnerability of the perimeter dike to seismically induced deformation during an earthquake, and to address future seal level rise. The main improvements to the perimeter dike, as described in the 2015 APD IS/MND, include the following:

- Raising the crest of the dike above the 10-foot elevation of the Stillwater Level (SWL) by approximately 3 feet—with 2 feet for freeboard and approximately 1 foot for sea-level rise.
- Raising the crest structure to an elevation of the 100-year Total Water Level (TWL), plus approximately 1 foot for freeboard and approximately 1 foot for sea-level rise. For the areas where raising the crest structure would not be feasible, the dike would be armored through the installation of riprap.
- Controlling through-seepage by constructing a soil-cement block, a seepage cutoff wall, or a drainage system along a portion of the perimeter dike.
- Improving the inboard slope of the dike by installing stability berms.
- Improving seismic performance of the sand portion of the dike by installing stone columns or a soil-cement block.

2.0 CHANGES IN THE PROJECT DESCRIPTION

Phase I of the APD Project design was revised to include improvements at certain locations along the South Field perimeter dike that was not assessed in the 2015 APD IS/MND or 2017 Addendum. Specifically, the improvements at the vehicle service road between station 206+00 to 243+00 as described in the 2017 Addendum was re-designed to avoid impacts from tidal waters. Rather, the re-design now impacts other waters to the south of the road, which avoids impacts to Ridgway Rail habitat. Table 1 summarizes the locations and the revised impacts to wetlands and other waters of the U.S. (See Figures 1-8).

3.0 CEQA ANALYSIS

Per Section 15164 of the CEQA Guidelines, an addendum to a previously certified Negative Declaration ("ND") if some changes or additions are necessary, but none of the conditions calling for preparation of a subsequent Negative Declaration per Section 15162 have occurred. As described in Section 15162, no subsequent or supplemental ND shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous ND due to the involvement of new significant environmental effects or a substantial increase in the severity of the previously identified significant effects;

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous ND due to the involvement of significant new environmental effects or a substantial increase in the severity of previously identified significant effects; or

3. New important information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the ND was adopted, that shows that:

    - The project will have one or more significant effects not discussed in the previous ND;

    - Significant effects previously examined will be substantially more severe than shown in the previous ND;

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

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

The revisions to the APD Project, as described in Section 2.0, will not result in any of the conditions above. There would be no new and/or more severe significant impacts above those identified in the 2015 APD IS/MND and 2017 Addendum as a result of the proposed revised Project, as analyzed in Section 4.0. Moreover, mitigation measures or alternatives are not considerably different than what was proposed in the previous 2015 APD IS/MND and 2017 Addendum.

As noted in Section 15164 of the CEQA Guidelines, an addendum need not be circulated for public review. Decision-making bodies shall consider the addendum with the adopted negative declaration prior to making decisions on the project.

4.0 ENVIRONMENTAL ANALYSIS

For all resources except Biological Resources, the proposed Project revisions are not expected to result in any substantial change in the impacts disclosed in the previously prepared ND. Because the location of the Project has not changed, no changes in impacts to agricultural resources, cultural resources, mineral resources, and land use as described in the 2015 APD IS/MND would occur. The elevation of the perimeter dike would be the same as described in the 2015 APD IS/MND and would not result in new or changed aesthetics impacts. Because construction activities and duration for the revised Project would be similar to what is described in the 2015 APD IS/MND, construction impacts associated with air quality, greenhouse gas emissions, water quality, hazardous materials, noise, recreation, and transportation would be similar and the Mitigation Measures AQ-1, HZ-1, HZ-2, HZ-3, and RE-1 included in the 2015 APD IS/MND would be implemented to reduce construction impacts to less than significant.

A discussion of the changes in impacts to Biological Resources due to the changes in the Project is provided below.

4.1 Effects on Special-Status Species

The proposed revisions to the Project include permanent fill for raising the crest structure at the revised vehicle road alignment at Stations 231+00 and 237+00, areas not included in the original project design and habitat assessment area. Therefore, Port staff assessed the revised vehicle road alignment for special-status species and prepared a second addendum to the February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project ("2018 Second Addendum BA") (Port 2018). The 2018 Second Addendum BA is included as Attachment B. The 2018 Second Addendum BA was used to evaluate potential impacts to special status species from the proposed revisions to the APD Project.

Salt Marsh Harvest Mouse

Station 231+00 to 237+00

As described in the 2015 APD IS/MND, 2017 Addendum IS/MND, 2016 BA, and 2017 Addendum BA (collectively "Assessments"), potential salt marsh harvest mouse habitat is present in the Project Area, and the Project could impact salt marsh harvest mouse habitat by permanently removing vegetation within non-tidal wetlands. Although the salt marsh harvest mouse is extremely unlikely to occur in the study area, the Assessments included BMPs and mitigation measures to reduce potential effects to salt marsh harvest mouse to less than significant.

As described in the 2018 Second Addendum BA, the Project revisions would result in additional permanent impacts between Stations 231+00 and 237+00. This area is designated as "Unsuitable for Salt Marsh Harvest Mouse".

Overall Revised ADP Project Impacts

Occurrences of the salt marsh harvest mouse in the revised Project Area is extremely unlikely, and it is highly probable that this species does not occur at OAK. In the unlikely event that an individual occurs on site during construction activities, this could be a potentially significant impact, as described in the 2015 APD IS/MND. To reduce impacts to a less than significant level, the Port will implement the BMPs described under Section 2.6 of the 2015 APD IS/MND. In addition, to further reduce the potential significant effects to the salt marsh harvest mouse, the Port will implement the 2015 APD IS/MND Mitigation Measure BO-1, Daily Monitoring of Construction Activities in Suitable Salt Marsh Habitat, in the revised Project Area.

Ridgway's Rail

Station 231+00 to 237+00

As described in the Assessments, the Project would permanently impact non-tidal wetlands that are marginally suitable for the Ridgway's rail. Ridgway's rail nesting is not likely to occur in the study area due to predation pressure and the absence of suitable breeding habitat. Juvenile migrants have a very low potential to occur in the study area when dispersing from nearby regional populations. Although the Ridgway rail is unlikely to occur in the study area, the Assessments included BMPs and mitigation measures to reduce potential effects to salt marsh harvest mouse to less than significant.

Based on current site conditions and data presented in the Assessments, the potential for Ridgeway's Rail to occur in the other waters of the U.S. from the additional permanent impacts between Station 231+00 to 237+00 is extremely small (0.75 acres), and it is probable that this species does not occur at this location. As shown in Figure 3-1 in the 2016 BA, the other waters of the U.S. found between Stations 231+00 to 237+00 is designated as "*Unsuitable Habitat for Ridgeway's Rail*".

Overall Revised ADP Project Impacts

In the unlikely event that dispersing individual Ridgway's rails occur on site during construction activities, this could be a potentially significant impact, as described in the Assessments. To reduce impacts to a less than significant level, the Port will implement the BMPs described in the 2015 APD IS/MND under Section 2.6. The Port will also implement Mitigation Measure BO-2, Environmental Awareness Training, and Mitigation Measure BO-3, Conduct Pre-Construction Surveys, to further reduce impacts. The Port also proposes to work with the Invasive Spartina Project (ISP) to address Ridgeway's rail impacts. The Port would help enhance 2.25 acre of habitat (3:1 ratio) for Ridgeway's Rail at ISP habitat enhancement sites proximate to OAK.

Other Special-Status Species

As described in the 2015 APD IS/MND, other special-status species that have the potential to be affected by wetland loss from the Project include the California black rail, northern harrier, white-tailed kite, salt marsh common yellowthroat, and Alameda song sparrow. None of these species has been documented breeding at the Airport, but it is possible that they are at least seasonally present in wetlands on site. Potential effects to these special-status wildlife species may occur due to loss of wetland, including the revised impacted areas, which these species may be actively using for foraging, breeding, roosting, or

other activities. Construction activities during the nesting season may also result in significant impacts to these species if they are nesting in or near the habitat assessment area. Implementation of construction BMPs per Section 2.6 of the 2015 APD IS/MND and Mitigation Measure BO-3, Conduct Pre-Construction Surveys, would reduce any impacts to less-than-significant levels. The BMPs and Mitigation Measure BO-3 would also be implemented in the revised project area to reduce any impacts to other special status species to a less than significant level.

4.2 Effects on Wetlands and Other Waters

The proposed revisions to the APD Project would change the quantities of impacts to wetlands and other waters of the U.S., as summarized in Table 1. Permanent impacts in some locations would be avoided by the proposed revisions (i.e. tidal wetlands), and new areas of impact would occur (i.e., other waters of the US). As described in the 2015 APD IS/MND, the Port would implement Mitigation Measure BO-4, to ensure no net loss of wetlands through the acquisition of offsite compensatory mitigation for unavoidable effects to the revised quantity of jurisdictional wetlands, as reviewed and approved by the USACE and the RWQCB. The Port would also implement specific construction BMPs, as described under Section 2.5 of the 2015 APD IS/MND, to minimize effects to adjacent jurisdictional wetlands and other waters during construction. In addition, the Port will continue to work with the USACE and the RWQCB to obtain a Section 404 permit for discharges to waters of the U.S., and a corresponding Section 401 Water Quality Certification/Waste Discharge Requirements from the RWQCB. Through these processes, the agencies would ensure that the revised Project is the Least Environmentally Damaging Practicable Alternative to impacting wetlands and waters of the U.S., and would assist in finalizing the most appropriate mitigation option for wetlands.

5.0 CONCLUSION

The revisions to the South Field Airport Perimeter Dike Improvement Project, as described in Section 2.0, would not result in any of the conditions calling for preparation of a subsequent Negative Declaration as defined in the CEQA Guidelines, Section 15162. No new significant environmental effects or a substantial increase in the severity of the previously identified significant effects, including effects to wetlands and special-status species, would occur. No substantial changes have occurred with respect to the circumstances under which the Project is undertaken. No changes in mitigation measures have been identified and no new mitigation measures are proposed or needed. Therefore, no subsequent or supplemental negative declaration is required. The 2018 Second Addendum to the 2015 ADP IS/MND has been prepared as the appropriate environmental document to present the effects of the proposed modifications to the Project.

6.0 REFERENCES:

CDFW (California Department of Fish and Game). 2013. Rarefind 5, a program created by the California Department of Fish and Game, allowing access to the California Natural Diversity Database.

Huffman-Broadway Group, Inc. (HBG). 2017. Addendum to February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project. August 29.

Port of Oakland. 2018. Second Addendum to February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project. April 17.

URS Corporation (URS). 2015a. FEMA and Seismic Improvements for Perimeter Dike 90 Percent Design Report, Oakland International Airport, Oakland, California. March 10.

URS. 2015b. Initial Study/Mitigated Negative Declaration, Airport Perimeter Dike FEMA and Seismic Improvements Project, Oakland International Airport, Oakland, California. September 1.

Table 1. Summary of Wetlands and Other Waters Impacts (acres)

Station	Improvements	Figure	Non-Tidal Wetlands	Non-Tidal Other Waters	Total
15+00 to 52+00	Raise Dike Sheetpile Wall Stability Berm	C3 to C5	0.377	0.002	0.379
52+00 to 82+00	Raise Dike Stability Berm	C5 to C7	1.394	0.000	1.394
82+00 to 164+00	Raise Dike Stability Berm	C12 to C15	0.089	0.007	0.096
164+00 to 192+00	Raise Dike Stability Berm	C15 to C17	0.740	0.134	0.874
192+00 to 206+00	Raise Dike	C17 to C19	0.103	0.000	0.103
206+00 to 230+00	Raise Dike	C19	0.001	0.000	0.007
230+00 to 241+00	Raise Dike Sheetpile Wall	C21	0.000	0.064	0.064
Total			**2.710**	**0.207**	**2.917**

Figures

Attachment A

Second Addendum to February 2016 Biological Assessment Airport Perimeter Dike FEMA and Seismic Improvements Project